

**Appendix A**  
**OB/OD Waste Analysis Plan**

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## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

### **1.0 Purpose**

Andersen Air Force Base Explosive Ordnance Disposal Flight treats munitions materials which meet the definition of hazardous waste under the United States Environmental Protection Agency and Guam Environmental Protection Agency regulatory definition. In addition, EOD Flight also detonates or burns other munitions materials which are not defined as hazardous wastes. This Waste Analysis Plan will be used to determine the treatability of the hazardous waste materials at Andersen AFB's EOD range.

This Waste Analysis Plan presents a procedurally oriented process for waste identification. A more traditional waste sampling and analysis procedure is not necessary as the waste composition is well documented for each waste to be treated. Furthermore, a more traditional sampling and analysis procedure is not feasible due to the inherent safety issues associated with waste ordnance materials.

## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

### 2.0 Related Documents

- 2.1 Environmental Performance Standards, Appendix I
- 2.2 T.O. 11A-1-42 General Instructions for Emergency Destruction of Munitions (EDM) This document provides information on accident prevention, description of demolition materials and firing system procedures (not releasable).
- 2.3 T.O. 11A-1-46 This document provides supplementary technical information on each type of munition, including NEW, National Stock Number, hazard classification, and compatibility group (not releasable).
- 2.4 EOD 60 Series T.O.'s These documents provide technical information for each type of munition regarding chemical and physical components and construction. These documents provide information on type, description of hazardous components, functioning, markings, and render safe procedures (not releasable).
- 2.5 Table III-1, Maximum Permissible Quantity of Metals and Sulfur that can be Treated per OB Event, Attachment 3
- 2.6 Table III-2, Maximum Permissible Quantity of Metals and Sulfur that can be Treated per OD Event, Attachment 4
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## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

### 3.0 Definitions

AAFB: Andersen Air Force Base

ADR: Ammunition Disposition Requisition This is the request for the EOD Flight to dispose of munitions. This request is evaluated with respect to acceptability of waste for treatment prior to acceptance at EOD Flight.

AFK: Munitions Supply

DODIC: Department of Defense Identification Code

DOD: Department of Defense

DRMO: Defense Reutilization and Marketing Office

Energetic Material: Any explosive material, whether contained within an ordnance or separated from the ordnance during treatment.

EPS: Environmental Performance Standards, a set of operational criteria presented within the Andersen AFB EOD RCRA Part B Application. These criteria include Limits on the amounts; types; and/or item constituents which are allowable for treatment at this EOD Range.

EOD: Explosive Ordnance Disposal

EOD Flight: Group of Andersen AFB personnel tasked with munitions disposal.

EOD Range: The area used by EOD personnel to perform treatment operations, EOD mission training, and emergency operations. The EOD Range is surrounded by a safety exclusion zone to minimize risk to human life during operations.

Explosive (Explosive Ordnance): Any chemical compound, mixture, or device whose primary purpose is to function by detonation or deflagration with instantaneous release of heat and gas.

Hazardous Waste: A solid waste that exhibits any of the characteristics of hazardous waste (ignitability, corrosivity, reactivity, and toxicity) or is a listed hazardous waste under RCRA (40 CFR 261.3).

Ignition Materials: Materials used to initiate the OB treatment process. These generally consist of a radio controlled igniter with a small quantity (10-20 gallons) of virgin diesel fuel.

## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

**Metallic Fragment:** Any metallic material that remains following ordnance treatment. Metallic fragment can include items remaining in the OB or OD treatment units or ejecta thrown out during treatment.

**Munitions Squadron:** The AAFB unit responsible for munitions related activities.

**NEW:** Net Explosive Weight is the mass of the explosive material within the particular munitions item.

**Non-hazardous Waste:** A solid waste that does not exhibit characteristics of hazardous waste.

**NSN:** National Stock Number, an internal DOD tracking number for each type of munitions.

**Open Burning (OB):** Combustion of PEP or explosive ordnance without the control of combustion air, containment of the combustion reaction in an enclosed device, or control of gaseous and particulate combustion products.

**Open Detonation (OD):** Unconfined, violent reaction of PEP or explosive ordnance without the control of combustion air, containment of the combustion reaction in an enclosed device, or control of emission of gaseous and particulate combustion products.

**PEP:** Term used to refer collectively to propellants, explosives, and pyrotechnics.

**Residue:** Any material remaining from OB/OD activities. Residue may include materials from non-RCRA treatment OB/OD operations (i.e. training, or emergency operations) which may also take place on the EOD Range.

**T.O. Documents:** DOD Technical Order documents.

### **4.0 Waste Analysis Procedures**

The Waste Analysis Procedure is essentially a waste identification process which is comprised of the following general steps.

- General item identification
- Comparison to a pre-evaluated list
- NEW quantity determination
- Specific component chemical identification
- Determination of treatment method
- Evaluation with respect to Environmental Performance Standards

The waste analysis procedure is then followed by a decision to proceed as proposed, proceed with a modified procedure, or not proceed with treatment of waste munitions.

A graphic presentation of these steps is shown in the Environmental Performance Standards Waste Evaluation Flow Chart. As shown in the Flow Chart, if the waste munitions have not been pre-evaluated, several additional evaluation steps are required.

### **4.1 EOD Flight Notification**

The process is initiated when EOD Flight receives notification from AAFB AFK of a desire to treat waste munitions, normally via e-mail. This notification includes operational identification information such as ADR number, lot number(s), stock number, DODIC, common name, NEW, and quantity of each item.

### **4.2 General Item Identification**

EOD Flight researches each individual munition type listed in the ADR by using the 60-series TO that covers the munition item and/or TO 11A-1-46. The information in these documents is used to confirm the identification of each type of munition on the basis of physical description, characteristic markings, DODIC number (analogous to make and model number), and matching stock number.

### **4.3 Comparison to Pre-Evaluated List**

Following identification of each munition, EOD determines whether each item has been pre-evaluated as acceptable for treatment by OB or OD.

## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

The munitions items which have been pre-evaluated as acceptable for treatment at AAFB's EOD Range are listed in Table III-7, along with the treatment method (OB or OD).

### 4.4 Treatment of Pre-Evaluated Munitions

The following steps are followed for treatment events which include only pre-evaluated waste munitions.

#### 4.4.1 NEW Quantity Research

EOD Flight researches the NET Explosive Weight of the explosive materials within each munition using T.O. 11A-1-46 and/or the 60 Series T.O.s.

#### 4.4.2 Evaluation of Environmental Performance Standard Restrictions

For a treatment event composed entirely of pre-evaluated items, the only additional evaluation is comparison of the munitions and quantities slated for treatment to the limitations presented in Table EPS-19 (for Open Burning treatment events) or Table EPS-21 (for Open Detonation treatment events) as appropriate. These two Environmental Performance Standards restrict the quantity of certain specific munitions per treatment event. (Item numbers refer to those presented in Table III-7)

**Table III-EPS 19**

**Maximum NEW per Open Burn Treatment Event**

**Andersen AFB EOD Range, RCRA Waste Treatment Operations**

The maximum NEW for each OB event is 100 lbs, except for the following items.	
Item Nos. 10, 42, 43, 45, 50	Restricted to 5 lbs (total NEW)
Item Nos. 36, 37, 38, 39, 40, 51	Restricted to 10 lbs (total NEW)
Item No. 4	Restricted to 50 lbs (total NEW)

(reference: EPS 19)



## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

**Table III-EPS 21**

**Maximum NEW per Open Detonation Treatment Event  
Andersen AFB EOD Range, RCRA Waste Treatment Operations**

The maximum NEW for each OD event is 600 lbs, except for the following items.		
Total NEW (lbs) For OD Event	Maximum Munition Item NEW (lbs)	
	No. 95	No. 14,15,
1	0.26	1.0
5	0.54	2.7
20	0.64	3.2
50	1.4	7.0
100	2.1	10
200	3.5	17
300	5.0	25
400	6.7	33
500	8.3	42
600	10.0	50

(reference: EPS 21)

### 4.4.3 Treatment

Providing all munitions are listed in Table III-7, the proposed treatment event proceeds as proposed or is modified, if required, as per the restrictions imposed by Environmental Performance Standards #7, #19 and/or #21.

### 4.5 Treatment Events Including Waste Munitions Not Pre-evaluated

For munitions not listed as pre-evaluated, additional evaluation must be accomplished as follows for all munitions in the proposed treatment event.

EOD Flight researches the specific chemical components which makeup the explosive materials within each munition using the 60 Series EOD T.O.'s. Data gathered from the appropriate T.O. includes both chemical constituents and quantity of each constituent.

#### 4.5.1 Treatment Events including Munitions Not Pre-evaluated Without Compounds of Concern

If the research of the munitions which were not pre-evaluated reveal no compounds of concern (metals and sulfur), the NEW of the munitions is totaled, and the proposed treatment event may proceed with only those restrictions imposed by EPS #7, #19 and/or #21.

#### 4.5.2 Treatment Events including Munitions not Pre-evaluated with Compounds of Concern

## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

If the research of the munitions which were not pre-evaluated reveals they contain compounds of concern (metal and sulfur compounds), these compounds must then be evaluated for all munitions in the proposed treatment event.

The totals for each of the chemical components of concern are compared to the maximum permissible quantity of metals and sulfur per treatment event as specified in Table III-1 (for OB treatment) or Table III-2 (for OD treatment).

Following this evaluation, the proposed treatment event may proceed under the restrictions imposed by Table III-1 (for OB treatment) or Table III-2 (for OD treatment), or by EPS #7, #19 and/or #21 whichever is more restrictive.

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### **5.0 Documentation**

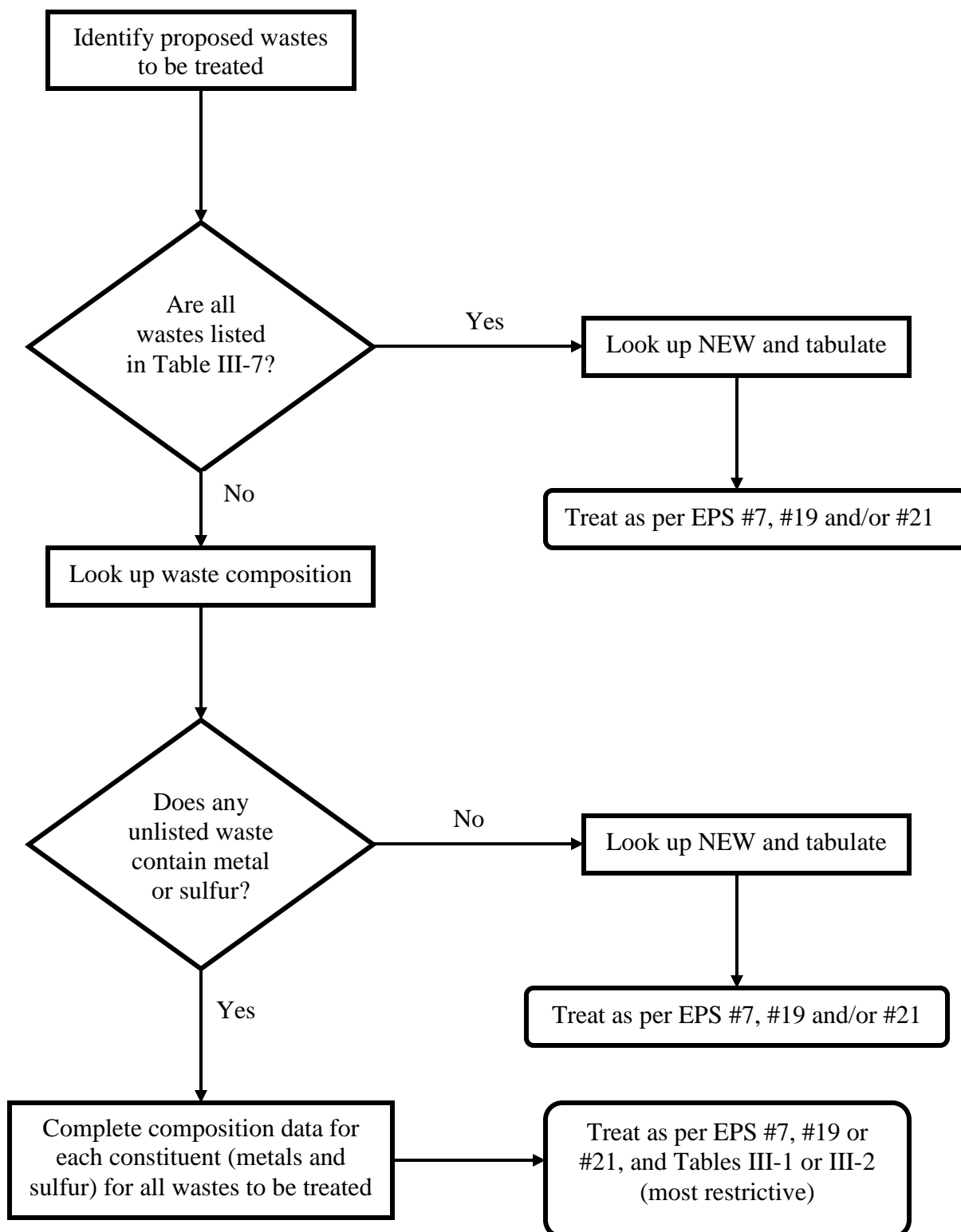
The procedures completed for evaluating the acceptability of the proposed waste munitions for treatment by either OB or OD are documented using the Waste Munitions Analysis Checklist (see Attachment 5).

Attachment 1

Environmental Performance Standards

Waste Evaluation Flow Chart

## Environmental Performance Standards Waste Evaluation Flow Chart



Attachment 2

Table III-1 Maximum Permissible Quantity of Metals and Sulfur that  
can be Treated per OB Event, AAFB EOD RCRA Part B Application

## APPENDIX A - OB/OD WASTE ANALYSIS PLAN

TABLE III – 1

Maximum Permissible Quantity of Metals and Sulfur that can be Treated per OB Event  
Andersen AFB EOD Range, RCRA Waste Treatment Operations

Constituent	Quantity per Event (lbs)
Aluminum Cpds, as Al	25.30
Antimony Cpds, as Sb	2.50
Barium Cpds, as Ba	0.51
Calcium Cpds, as Ca	0.34
Copper Cpds, as Cu*	0.00
Iron Cpds, as Fe	84.80
Lead Cpds, as Pb	2.72
Magnesium Cpds, as Mg	57.20
Potassium Cpds, as K	45.90
Silver Cpds, as Ag	1.02
Sodium Cpds, as Na	35.10
Strontium Cpds, as Sr	4.09
Sulfur Cpds, as S	0.63
Tin Cpds, as Sn	0.07
Uranium Cpds, as U	1.11
Zinc Cpds, as Zn	19.00

\*Copper compounds not evaluated.

Historically no copper compound containing items have been treated by OB.

Attachment 3

Table III-2 Maximum Permissible Quantity of Metals and Sulfur that  
can be Treated per OD Event, AAFB EOD RCRA Part B Application



# APPENDIX A - OB/OD WASTE ANALYSIS PLAN

**TABLE III – 2**

**Maximum Permissible Quantity of Metals and Sulfur that can be Treated per OD Event  
Andersen AFB EOD Range, RCRA Waste Treatment Operations**

Maximum Quantity per Event (lbs)								
Constituent	Total Event NEW 1 lb	Total Event NEW 5 lb	Total Event NEW 20 lb	Total Event NEW 50 lb	Total Event NEW 100 lb	Total Event NEW 200 lb	Total Event NEW 400 lb	Total Event NEW 600
Aluminum Cpds, as Al	4.03	8.36	13.98	21.62	32.43	54.04	101.33	152.00
Antimony Cpds, as Sb*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium Cpds, as Ba	0.07	0.14	0.23	0.36	0.54	0.89	1.67	2.51
Calcium Cpds, as Ca	0.20	0.42	0.71	1.10	1.64	2.74	6.13	7.70
Copper Cpds, as Cu	0.01	0.01	0.02	0.03	0.05	0.08	0.15	0.22
Iron Cpds, as Fe	8.32	17.26	28.87	44.66	66.99	111.64	209.33	314.00
Lead Cpds, as Pb	0.47	0.98	1.64	2.53	3.80	6.33	11.87	17.80
Magnesium Cpds, as Mg	8.47	18.14	30.34	46.93	70.40	117.33	220.00	330.00
Potassium Cpds, as K	0.36	0.75	1.25	1.93	2.90	4.84	9.07	13.60
Silver Cpds, as Ag*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sodium Cpds, as Na	5.59	11.60	19.40	30.01	45.01	75.02	140.67	211.00
Strontium Cpds, as Sr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sulfur Cpds, as S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tin Cpds, as Sn*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uranium Cpds, as U*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zinc Cpds, as Zn	3.02	6.27	10.48	16.21	24.32	40.53	76.00	114.00

\* Noted compounds not evaluated

Historically, no items containing these compounds have been treated by OD

Attachment 4

Table III-7 Ordnances Pre-Evaluated

Andersen AFB EOD RCRA Treatment Operations

# APPENDIX A - OB/OD WASTE ANALYSIS PLAN

Table III-7  
 Ordnances Pre-Evaluated  
 Andersen AFB EOD RCRA Treatment Operations  
 (Page 1 of 3)

Ordnance #	Name	OB	OD
1	Cartridge, 5.56 mm Ball	X	X
2	Cartridge, 5.56 mm Ball/tracer	X	X
3	Cartridge, 5.56 mm Blank	X	X
4	Cartridge, 7.62 mm Blank	X	X
5	Cartridge, 7.62 Ball	X	X
6	Cartridge, 9 mm Para	X	X
7	Cartridge, 12 gauge	X	X
8	Cartridge, .30-06	X	X
9	Cartridge, .357 Magnum	X	X
10	Cartridge, 20 mm HEI		X
11	Cartridge, 40 mm	X	X
12	M58A3 40mm		X
13	Simulator, Booby Trap	X	X
14	Cap, Electric blasting		X
15	Cap, Non-electric blasting		X
16	Cord, detonating		X
17	FLSC 100 to 600 GPF		X
18	Fuse, time	X	X
19	Igniter, M60	X	X
20	Charge, demolition, M112 (C4)		X
21	Charge, demolition, TNT		X
22	Charge, assembly, demolition		X
23	Demolition kit, Bangalore torpedo, M1A1		X
24	Charge, demolition block, M118		X
25	Charge, demolition roll		X
26	Deta Sheet		X
27	Charge, demolition, shaped 15lb		X
28	Charge, demolition, shaped 40lb		X
29	Cratering charge M180		X
30	Demolition kit, projected charge, M1		X
31	Dynamite, military, M1		X
32	Water Gel Explosive		X
33	Single-base smokeless powder	X	X
34	Black powder	X	X
35	Fireworks, seal	X	X
36	Firing device, M1	X	X
37	Firing device, demolition, M1A1	X	X
38	Firing device, demolition, M5	X	X
39	Firing device, demolition, M3	X	X
40	Firing device, demolition, M1	X	X

# APPENDIX A - OB/OD WASTE ANALYSIS PLAN

Table III-7  
 Ordnances Pre-Evaluated  
 Andersen AFB EOD RCRA Treatment Operations  
 (Page 2 of 3)

Ordnance #	Name	OB	OD
41	Cartridge, Fire Extinguisher	X	X
42	Detonator, percussion, M2A1	X	X
43	Detonator, percussion, M1A2	X	X
44	Cutter, line M21	X	X
45	Detonator kit, M1		X
46	Cartridge, impulse	X	X
47	Cartridge set, impulse	X	X
48	Cartridge, initiator	X	X
49	Cartridge, actuator	X	X
50	Primer, percussion, cap	X	X
51	Firing device, demolition, M142	X	X
52	Simulator, ground, M115/M116	X	X
53	Smoke Pot		X
54	Squib, Fire Extinguisher	X	X
55	Squib, M1	X	X
56	Signal, Smoke/illuminating	X	X
57	Kit, Aot Deploy	X	X
58	2 Bomblet		X
59	M74 Bomblet		X
60	AN/M50		X
61	Bomb, MK 82		X
62	Bomb,M117		X
63	Fuze, Type 93		X
64	Fuze, FMU 113/B		X
65	Fuze, FMU 54A/B		X
66	Fuze, MK 28		X
67	Fuze, MK18		X
68	Fuze, M905		X
69	Booster, M147/M148		X
70	Mortar, M49A2		X
71	Mortar, Type 97		X
72	Projectile, 5 inch		X
73	Projectile, high explosive		X
74	Projectile, MK28		X
75	Projectile, MK34		X
76	Projectile, MK35		X
77	Projectile, MK44		X
78	Projectile, MK45		X

# APPENDIX A - OB/OD WASTE ANALYSIS PLAN

Table III-7  
 Ordnances Pre-Evaluated  
 Andersen AFB EOD RCRA Treatment Operations  
 (Page 3 of 3)

Ordnance #	Name	OB	OD
79	Projectile, MK165, 76 mm		X
80	Projectile, White Phosphorus		X
81	Rocket, LAW		X
82	Rocket, LAW-35mm subcaliber	X	X
83	Mine, antipersonnel, M16		X
84	Mine, antipersonnel, M14		X
85	Mine, antipersonnel, M26		X
86	Mine, antitank, M15		X
87	Mine, antitank, M19		X
88	Mine, Claymore, M18		X
89	Flare, MK25		X
90	Flare, AN-M 26		X
91	Flare, MK124	X	X
92	Flare, Personal distress	X	X
93	Flare, ALA17/B	X	X
94	MK 24 Cluster		X
95	Grenade, MK1, Illuminating		X
96	Grenade, M14	X	X
97	Grenade, MK-2		X
98	Grenade, Smoke, M18	X	X
99	Grenade, Type 97		X
100	Grenade, Type 99		X
101	Grenade, fragmentation		X
102	Grenade, offensive, MK3A2		X
103	Weapons, Confiscated		X
104	Ethylene Oxide	X	X

Attachment 5

Waste Munitions Analysis Checklist

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3. Total NEW for proposed event \_\_\_\_\_
4. Verify acceptability with EPS #7. \_\_\_\_\_
5. Verify acceptability with EPS #19 (Open Burn Treatment). \_\_\_\_\_
- 5a. 5 lb NEW restriction (Item Nos. 27, 28, 99, 100, 102, 111) \_\_\_\_\_
- 5b. 10 lb NEW restriction (Item Nos. 3, 104, 105, 106, 107, 108, 109, 113) \_\_\_\_\_
- 5c. 50 lb NEW restriction (Item No. 4) \_\_\_\_\_
6. Verify acceptability with EPS #21 (Open Detonation Treatment) \_\_\_\_\_
- 6a. Any Item # 30 \_\_\_\_\_
- 6b. Any Items # 12, 13, and/or 95 \_\_\_\_\_
7. Proceed with Treatment Event
8. Does research indicate any contaminants of concern (metals and sulfur) contained within waste munitions not pre-evaluated??
- a. YES \_\_\_\_\_ .... continue to STEP 9 ....
- b. NO \_\_\_\_\_ .... return to STEP 2 and complete evaluation ....
9. Complete FORM 2 detailing quantities of contaminants of concern.
10. Do any quantities of contaminants of concern exceed limits presented in Table III-2?
- a. YES \_\_\_\_\_ .... revise proposed waste munitions treatment and repeat STEP ....
- b. NO \_\_\_\_\_ .... return to STEP 2 and complete evaluation ....



APPENDIX A - OB/OD WASTE ANALYSIS PLAN

Form 2

Determination of Quantity of Metals and Sulfur for Proposed Event  
Andersen AFB EOD Range, RCRA Waste Treatment Operations

Waste Munitions Analysis Checklist  
RCRA Treatment Operations  
Andersen AFB

Contaminant of Concern	Item:		Item:		Item:		Item:		All Items
	No. of Items:		No. of Items:		No. of Items:		No. of Items:		
	Amount per Item	Total for Items	Amount per Item	Total for Items	Amount per Item	Total for Items	Amount per Item	Total for Items	
Aluminum Cpds, as Al									
Antimony Cpds, as Sb									
Barium Cpds, as Ba									
Calcium Cpds, as Ca									
Copper Cpds, as Cu									
Iron Cpds, as Fe									

Proposed Treatment Event Date: \_\_\_\_\_

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Waste Munitions Analysis Checklist  
RCRA Treatment Operations  
Andersen AFB

## Contaminant of Concern

Lead Cpds, as Pb	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Magnesium Cpds, as Mg	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Potassium Cpds, as K	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Silver Cpds, as Ag	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Sodium Cpds as Na	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Strontium Cpds, as Sr	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Sulfur Cpds, as S	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Tin Cpds, as Sn	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Uranium Cpds, as U	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Zinc Cpds, as Zn	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Proposed Treatment Event Date: \_\_\_\_\_

## **Appendix B**

### **Security Procedures and Equipment**

## APPENDIX B - SECURITY PROCEDURES AND EQUIPMENT

### 1. Procedures To Prevent Hazards

Security Procedures and Equipment (Parts X.A. and VI.A. [Adopts by reference 40 CFR 270.14(b)(4) and 40 CFR 264.14] of the GHWMRs)

*Demonstration That Unknown or Unauthorized Contact with Waste Is Not Harmful (Part VI.A. [Adopts by reference 40 CFR 264.14(a)(1)] of the GHWMRs)*

Unauthorized contact with the waste treated at the OB/OD cannot happen, as the wastes are only on-site during attended operations. Therefore, this section is not applicable.

*Demonstration That Disturbance of Waste or Equipment Will Not Cause Violation of 40 CFR 264 (Part VI.A. [Adopts by reference 40 CFR 264.14(a)(2)] of the GHWMRs)*

Unauthorized contact with the waste treated at the OB/OD cannot happen, as the wastes are only on-site during attended operations. Therefore, this section is not applicable.

*Description of a 24-hour Surveillance System (Part VI.A. [Adopts by reference 40 CFR 264.14(b)(1)] of the GHWMRs)*

There are varying degrees of security requirements and procedures at Andersen AFB to control access to the main base as well as to restricted areas. Each entry has certain restrictions that must be observed by all personnel. Base employees are issued identification cards and are required to show the cards to gain access to the base. Visitors to the base, including guests of military personnel and Government of Guam agency representatives, must be sponsored onto the base.

The main base may be entered at two locations: the front (main) entrance and the rear entrance. The main entrance is on Marine Corps Drive and a 24-hour-a-day manned guardhouse, fence, and gates control access. The rear entrance is on Santa Rosa Boulevard and consists of a guardhouse, fence, and gates that currently provide access 12 hours per day.

Security at Andersen AFB is maintained by the 36th Wing, 36th Security Forces Squadron. In addition to manning the guardhouses, the police squadron provides a 24-hour, 7-day per week roving patrol service throughout the base.

Entry into the flight line and restricted areas, such as the EOD Range, by unauthorized base and off-base personnel is prohibited. Escorts and log-in requirements are imposed upon entry to restricted areas. These areas are either completely fenced in or bounded by a natural barrier such as a cliff or forest. Vehicular access to the EOD Range is denied by two sequential gates on the only access road.

*Description of the Artificial or Natural Barrier (Part VI.A. [Adopts by reference 40 CFR 264.14(b)(2)(i)] of the GHWMRs)*

In addition to the security provisions of fencing, gates, and guards several natural features contribute to the safety and security of the EOD Range. Access to the EOD Range is controlled through the use of both natural and artificial barriers. It is bounded to the north by the Pacific

## APPENDIX B - SECURITY PROCEDURES AND EQUIPMENT

Ocean, by the flight line cliff on the south and east, and by two separately locked gates on the access road to the west.

As discussed above, the only vehicular access route is by the only access road, which has two sequential locked gates. Non-vehicular access is denied from three of four compass directions by natural barriers.

The EOD Range is bordered to the north by the Pacific Ocean. This area of the island of Guam is encircled by a continuous reef line approximately 200 feet off shore. One cannot bring a boat to shore in this area. Likewise, a swimmer would sustain serious injury attempting to cross the reef.

The EOD Range is bordered to the south and east by a dense jungle in arid etched karst limestone bedrock in an area of tremendous topographic relief. The ground surface elevation south of the range rises some 500 feet in less than 1/2 mile. These two barriers should prevent any person from accessing the EOD Range.

The EOD Range is bordered to the west by the same dense jungle growth. Line of sight distances in this dense jungle growth average less than 50 feet. Only two clear paths are available from the west. The first is the access road, which has security structures as previously discussed. The second potential line of access is the beach itself, which is approximately 100 feet wide at the east end of Tarague Beach. Wave action and typhoon conditions on the beach have made it extremely difficult to maintain any barriers to physically prevent entry from the west along the beach. Unknowing entry is prevented through warning signs maintained at the Pati Point Recreation Area approach.

In addition to the above discussion of the natural barriers to all four cardinal compass headings, one must also bear in mind that the EOD Range is totally enclosed on three of four sides by Andersen AFB. The nearest public or private property is several miles off base.

*Method to Control Entry and Number of Personnel in the Treatment Area (Part VI.A [Adopts by reference 40 CFR 264.14(b)(2)(ii)] of the GHWMRs)*

In addition to the warning signs and locked gates to prevent unauthorized entry, red warning flags are flown during EOD operations. The red flags are flown at two locations: the gate at the small arms range on Tarague Well Road and on the beach near the personnel bunker at the EOD treatment area.

*Sign Posted at Each Entrance with Legend "Danger -Unauthorized Personnel Keep Out" (Part VI.A [Adopts by reference 40 CFR 264.14(c)] of the GHWMRs)*

Warning signs are posted along both accessible and inaccessible boundaries of the EOD Range to provide would-be trespassers ample notice that the site is a restricted area. All signs are written in English and Chamorro and are legible from at least 25 feet away. Warning signs that read "Danger, Explosive Disposal Range Keep Out" are posted along the cliff top above the EOD Range. The warning signs at the Pati Point Recreation Area approach to the west consist of

## APPENDIX B - SECURITY PROCEDURES AND EQUIPMENT

the following legend: "Danger, Small Arms Range, DOD Ammunition Dud Area, Off Limits To All Personnel." Prior to any operation of the EOD Range, the beach area is inspected to eliminate the possibility of unauthorized entry. Warning signs are also posted at both locked gates on the access roads and on the beach at the treatment area within the EOD Range. The signs state: "Danger, Explosive Disposal Range, Keep Out."

To reinforce that the EOD Range is a restricted area, 40 warning signs with a legend in both English and Chamorro will be distributed around the perimeter of the EOD Range. These signs will be legible from a distance of 25 feet. The legend consists of "DANGER" in white 4-inch capital letters on a red and black background. Beneath the word "Danger," in 4-inch black lettering, is "EXPLOSIVE DISPOSAL RANGE KEEP OUT" on a white background. Beneath the warning written in English is a corresponding warning written in the local language of Chamorro.

## **Appendix C**

### **Inspection Schedule**

## APPENDIX C - INSPECTION SCHEDULE

### 1. Inspection Schedule

*Copy of Inspection Schedule (Parts X.A. and VI.A [Adopts by reference 40 CFR 270.14 and 264.15] of the GHWMRs)*

Operation of the EOD Range is in accordance with standard operating procedures (SOPs) in place at Andersen AFB. 36<sup>th</sup> Wing Instruction (36WI 32-3001) provides procedures for the safe operation of the EOD Range. These operating procedures direct EOD personnel to inspect the range before and after operations as well as after any typhoons/storms. 36WI 32-3001 details information on EOD procedures, personnel safety and responsibilities, and checklists on safety inspections and range/demolition.

*Types of Problems to Be Checked (Part VI.A. [Adopts by reference 40 CFR 264.15] of the GHWMRs)*

Inspection of the EOD Range occurs both before and after conducting any operations at the site. These are the most critical times for inspections to correct deficiencies, which may interfere with the safe progress of the treatment process and threaten human health and the environment. The purpose of these inspections is to detect any unexploded ordnance (UXO), metal fragments, and/or other discharges that could affect human health or the environment. The pre-operation inspection includes checking for any unauthorized personnel on the beach prior to accepting delivery of the munitions to the range. Additional pre-operations checklists examine the integrity of security devices and emergency response equipment. A copy of the inspection checklists may be found in the EOD Operating Procedures Appendix.

*Frequency of Inspections of Equipment and Process (Part VI.A. [Adopts by reference 40 CFR 264.15(b)(4)] of the GHWMRs)*

Inspections of the OB kettle occur before and after operations, as well as after any typhoons/storms. As previously stated, there is no other equipment to inspect.

*Inspection Record Keeping (Part VI.A. [Adopts by reference 40 CFR 264.15] of the GHWMRs)*

Records of inspections and the inspection schedule are documented in the EOD Incident Management System (EODIMS) report. (EODIMS is an online database that far exceeds 3 year requirement)

*Schedule of Remedial Action (Part VI.A. [Adopts by reference 40 CFR 264.15] of the GHWMRs)*

During EOD Range inspections, any deterioration/malfunction of equipment will be noted and the problem alleviated prior to commencing operations. Repair/replacement of the burn kettle are the only approved actions.



## APPENDIX C - INSPECTION SCHEDULE

*Daily Inspection for Leaks, Spills, and Fugitive Emissions, and All Emergency Shutdown Controls and System Alarms (Part VII.A. [Adopts by reference 40 CFR 265.377] of the GHWMRs)*

No stacks, emission control devices, or associated equipment are present on the EOD Range treatment site. The site consists of an isolated open area composed primarily of beach sand and coral. Prior to commencing operations on the EOD Range, the inspection procedures outlined in 36WI 32-3001 are completed. Deficiencies are noted and corrected prior to commencing operations.

### **2. Preparedness and Prevention (Parts X.A. and VI.A. [Adopts by reference 40 CFR 270.14 and 40 CFR 264(Subpart G)] of the GHWMRs)**

The intent of the preparedness and prevention measures taken by Andersen AFB is to minimize the possibility of a fire, accidental explosion, or any unplanned sudden or non-sudden releases of hazardous waste (HW) or hazardous constituents, which could threaten human health or the environment.

*Description and Location of Internal Communications and Alarm System to Instruct Facility Personnel (Part VI.A. [Adopts by reference 40 CFR 264.32(a)] of the GHWMRs)*

Operating personnel on the EOD Range maintain visual contact. Communication is by voice or handheld radios.

**Appendix D**

**Personnel Training**

## APPENDIX D – PERSONNEL TRAINING

### Personnel Training

*Outline of Both the Introductory and Continuing Training Programs (Part X.A. [Adopts by reference 40 CFR 270.14(b)(12)] of the GHWMRs) and Training Content, Frequency, and Techniques*

All EOD personnel go through extensive training, introductory through advanced levels, through schools at Naval School Explosive Ordnance Disposal, Eglin AFB, FL (NAVSCOLEOD, and continue with on-the-job practical training, textbook training, and off-site training courses. EOD training is constantly being updated and revised to keep up with improved techniques and new technology. Therefore, the training outline and specific courses discussed here are subject to change throughout the active life of the unit. However, these revisions will not cause reduction but will enhance the overall quality and excellence of the current EOD training requirements.

#### Preliminary Training Program

EOD students must first graduate from Air Force basic training prior to enrolling in the EOD program. Many new students in the EOD program have transferred from another Air Force duty and are continuing in EOD for cross training. EOD students start out with preliminary training course four weeks in length, which introduces EOD work. If students pass the preliminary course, they then proceed to NAVSCOLEOD.

#### EOD Basic Training Programs

Explosive Ordnance Disposal Basic Training course is located at NAVSCOLEOD, Eglin AFB, Florida. This intensive basic training program takes approximately eight to twelve months to complete. It incorporates classroom and practical hands-on training. Each phase of the training covers the following subject areas; however, there is overlap in some subject areas.

- Researching Explosive Data
- Tool Sets and Techniques for Remote Procedures
- Demolition Procedures
- Chemical Ordnance Decontamination and Disposal
- Explosive Effects and Properties
- Comprehension of Demolition Materials
- Comprehension of Firing Techniques
- Operation of .50 Caliber Dearmer, U.S. Tool Set & Remote Wrench
- Comprehension of Shaped and Special Charges
- Special Explosive Techniques
- Disposal Procedures for Conventional Explosives and Related Hazardous Materials
- Nuclear Ordnance Identification
- Conventional Ordnance Identification and Function
- Conventional Ordnance Safe Rendering and Disposal

## APPENDIX D – PERSONNEL TRAINING

Upon successfully completing NAVSCOLEOD, EOD Apprentices are assigned to an EOD unit at specific bases such as Andersen AFB. The duties and responsibilities of an EOD Apprentice are described in the Skill Level Summary, in the Training Plan Appendix.

### EOD Advanced and Continuing Training Programs

The level of activity and responsibility for EOD Apprentice is continuously increased as they become proficient in EOD operations. Students become certified in various techniques by conducting them with a certified experienced EOD supervisor. EOD personnel are required to complete extensive practical and textbook training. Training is conducted approximately three days per week during the duty day. Practical EOD training is conducted three to nine times a month. During practical training, EOD flight members are trained and evaluated by supervisors.

There are several training programs that are completed concurrently by EOD personnel. Training is a continuous process, and each individual must advance in training level in accordance with specified time limits in order to remain in the EOD unit. Individual Apprentices are constantly reviewing previously learned techniques in order to retain their proficiency.

There are four levels of training and proficiency (skill levels). A member of an EOD unit starts as an EOD Apprentice (as mentioned above). The second level of proficiency is an EOD Journeyman. The third level is an EOD Craftsman. The highest level of training and proficiency is an EOD Superintendent. Many training programs have specific time limits to complete in order to maintain EOD status.

*A Description of How Training Will Be Designed to Meet Actual Job Tasks (Part X.A. [Adopts by reference 40 CFR 270.16(a),(b),(c)] of the GHWMRs)*

Training records are maintained for each individual. The required training programs are discussed below.

Air Force Institute for Advanced Distributed Learning, Air University (Course # 3E851). This 12-month course, referred to as the Career Development Course (CDC), includes extensive reading requirements followed by testing to graduate. This course requires EOD members to increase their level of knowledge pertaining to overall EOD operations. Graduation from this course moves EOD members up one level on the training scale within the individual's skill level. EOD personnel must complete this course within one year in order to remain in EOD.

Department of Air Force, EOD Training (Course # STS 3E8X1). The purpose of this training program is to train airmen to perform duties in the Explosive Ordnance Disposal ladder of the Civil Engineer career field. As EOD personnel perform the on-the-job training, they qualify under Job Qualification Standards. The purpose of the EOD Qualification is to train EOD members on specific explosive techniques and overall EOD functions. EOD must be "qualified" prior to handling a certain type of ordnance. All training under the Specialty Training Standard (STS) is recorded on Air Force Training Record (AFTR) computer based training records. EOD personnel must likewise study and pass Promotion Tests to advance to higher ranks/enlisted grades.

## APPENDIX D – PERSONNEL TRAINING

This training continues throughout the career of an EOD member. Proficiency in training items is reviewed annually by the supervisor to determine whether level of knowledge and proficiency has been maintained. If not, STS training will have to be recertified. The general areas of this training include:

- Security
- Air Force Occupational Safety and Health
- Explosive Ordnance Disposal
- Electricity
- Tools and Equipment
- Explosives and Propellants
- Destruction of Explosives and Related Hazardous Materials
- Explosive Ordnance Reconnaissance
- Protection of Personnel and Property
- U.S. and Foreign Dropped and Projected Munitions, Missiles, and Pyrotechnics
- Underwater Ordnance

Pacific Air Forces (PACAF) Job Qualifications Standards (JQSs). This course work is sent to Andersen AFB from PACAF and/or established by the Andersen EOD Flight Chief. It makes up the requirements for Initial Qualification Evaluation (IQE), certification, and additional duty position requirements needed to support EOD agencies. It includes both practical and textbook training requirements. PACAF training continues throughout the careers of EOD personnel at Andersen AFB and other Air Force bases within PACAF. EOD personnel must meet JQSs each year.

Flight Operating Instructions. Flight Operating Instructions (FOIs) are written at the Flight level, and Instructions are written at the Base or Command level for EOD personnel for specific operations at Andersen AFB. The FOIs must go through the base chain of command for coordination and approval before they become official operating documents.

The PACAF training checklists include reading and understanding FOIs that are applicable to EOD operations. All EOD personnel must be certified for each applicable Andersen AFB FOI; they cover the following areas (FOI #, date):

- 32-3002 EOD Standby and Response Procedures (Apr 2008 )
- 36WG32-3001 EOD Demolition Range and Munitions Residue Inspection Procedures (May 2009)
- 32-3003 EOD Transportation of Explosives (Apr 2008)
- 32-3004 Use of EOD Explosive Actuated Tool Kits and Techniques Off-Range (Apr 2008 )
- 32-3008 EOD Procedures for the Andros MK VIA Robotic System (May 2008)

## APPENDIX D – PERSONNEL TRAINING

- 32-3009 Employment of Commander 10,000 Tychem Level A Protective Suit (Apr 2008)
- 32-3005 EOD Flight Respiratory Protection Program (Apr 2010)

Refresher and Advanced Off-site Training. Every 72 months, all EOD personnel are required to attend the following courses for the continuing education of EOD personnel:

- Joint EOD Advanced Nuclear Training, Sandia Laboratory, Kirtland AFB, NM
- Advanced IED Device Disablement, Eglin AFB, FL

### Training in Hazardous Waste Management

In addition to highly technical EOD training for the disposal of ordnance, EOD personnel attend Hazardous Waste Operations and Emergency Response (HAZWOPER)/Hazardous Materials Technician Training course and regulatory requirements under RCRA.

Industrial Hygiene Professionals, Inc. provides the aforementioned training in hazardous waste management. This training provides compliance with 40 CFR 264.16, TSDF Standards. EOD personnel must complete this course within six months of assignment, and may not work with hazardous waste in an unsupervised capacity until they have completed the training. This training is updated annually.

The following subject areas are covered during the training:

- Introduction
- Liabilities
- Responsibility
- Identification of Hazardous Waste
- Management of Hazardous Waste (accumulation point management)
- Spill Prevention and Response to Emergencies
- Contingency Planning and Emergency Response
- Hazardous Waste Turn-in Procedure
- Container Labeling/Management
- Waste Minimization
- Personnel Safety

## APPENDIX D – PERSONNEL TRAINING

- Exam

*Training for Emergency Response (Part X.A. [Adopts by reference 40 CFR 264.16(a)(3)] of the GHWMRs)*

EOD personnel are trained in emergency response by several training mechanisms. The PACAF JQS training and Department of the Air Force training (#STS 3E8X1) cover the Instructions and documents listed below. These documents include Air Force Instructions (AFI) and Air Force Technical Orders (AFTO). Several of these items, which are specific to EOD operations, are described in detail in the Training Plan Appendix.

- AFMAN 91-201: Explosive Safety Standards
- AFTO 11A-1-42, General Instructions for Disposal of Conventional Munitions
- AFTO 11A-1-46, Fire Fighting Guidance
- AFTO 60A-1-1-31, General Information on EOD Disposal Procedures
- AFI 31-101, Volume I, Physical Security Program
- EOD personnel are required to read and understand the 36<sup>th</sup> Wing Comprehensive Emergency Management Plan (CEMP) 10-2.

All EOD personnel will be required to become familiar with the Contingency Plan of this RCRA Part B Permit Application for the EOD OB/OD operations. (Appendix F)

Occupational Safety and Health requirements, including personal protective equipment, emergency shower and eyewash unit, chemical safety, and hazard communication, are taught through the advanced and continuing training programs and technical areas. Safety requirements unique to specific equipment are taught in conjunction with the operational training for that equipment. For example, EOD personnel are trained in safety requirements for electric power tools, specialized explosive tools, and explosives. Hazardous noise and fire protection briefings are conducted annually.

*Maintenance of Training Records/Copy of Personnel Training Document (Parts VI.A. and X.A. [Adopts by reference 40 CFR 264.16(d)(e) and 270.14(b)(12)] of the GHWMRs)*

Training content, frequency, and techniques. All EOD personnel will maintain their electronic training records in AFTR. Formal EOD training is recorded as well as all on-the-job training and testing. Personnel EOD training records will be transferred via the Unit Training Manager when they are transferred to another duty station.

All required training records for the hazardous waste management course would be kept until closure of the facility by 36th Civil Engineer Squadron, Environmental Flight (36 CES/CEV) staff. EOD personnel are generally stationed at Andersen AFB for a period of two years. Therefore,

## APPENDIX D – PERSONNEL TRAINING

there will be several changes of personnel through the operating period. It is unlikely that many (if any) current employees of Andersen AFB EOD will be employed at the time of closure.

Training records for the hazardous waste management course will be maintained by 36 CES/CED for three years after Permanent Change of Station (PCS). To ensure compliance with this requirement, 36 CES/CED will provide copies of the hazardous waste management training record to 36 CES/CEV HW Manager.

EOD personnel will attend annual Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher training. 36 CES/CEV will assist EOD personnel with obtaining annual refresher training in hazardous waste management. In the future, the responsibility for annual refresher training may be taken on by the appropriate EOD supervisors. EOD supervisors may then receive training assistance from 36 CES/CEV. Supervisors would then maintain records of refresher training for all personnel until three years after PCS. To meet this requirement, supervisors would annotate all hazardous waste training on the individual's AF Form 55. Upon PCS of an individual, supervisors would forward a copy of his or her AF Form 55 to 36 MED GP/SGOAB (Bio-Environmental Engineering).

*Director of the Training Program: Experience and Training in Hazardous Waste Management Procedures (Part VI.A. [Adopts by reference 40 CFR 264.16(a)(2)] of the GHWMRs)*

Position. The EOD person holding this position will generally meet the job description/skill level of Explosive Ordnance Disposal Superintendent.

### *Job Titles and Job Descriptions of All Employees Involved in OB/OD Operations*

The senior ranking EOD member will be the Range Safety Officer (RSO), responsible for all operations conducted on the range. The Team Chief will be identified prior to operations, and is responsible for running the operation and directing other team members on the range. All others will be team members and follow the direction of the RSO and Team Chief.

Other positions that track and evaluate training for OB/OD operations are:

The Training Monitor is responsible for scheduling the monthly training sessions for all EOD personnel and any additional training that Andersen EOD require, to include HAZWOPER. The Training Monitor ensures all required training is completed by the Andersen AFB EOD flight. He accomplishes this by tracking the training in a computer database.

The Quality Assurance function reviews the training records to ensure the Training Monitor is properly performing his/her job correctly and that all required training has been conducted in accordance with acceptable guidelines.



## **Appendix E**

### **Prevention of Ignition or Reaction**

## APPENDIX E – PREVENTION OF IGNITION OR REACTION

The EOD operations are manually prepared and initiated and do not require electrical equipment that would be affected by power outages.

*Personnel Protection Procedures (Part X.A. [Adopts by reference 40 CFR 270.14] of the GHWMRs)*

The handling of HW for OB/OD operations is conducted in a manner that minimizes contact of involved personnel with the waste. Requirements for personnel protection are in accordance with applicable AFOSH SOPs.

Hearing protection devices (ear plugs, earmuffs) are available for use. Half-face respirators with appropriate cartridges are also provided for use, as necessary. Likewise, gloves and safety glasses are used, where appropriate.

*Procedures to Minimize Releases to the Atmosphere (Part X.A. [Adopts by reference 40 CFR 270.14] of the GHWMRs)*

The nature of OB/OD HW treatment on the EOD Range does not provide for procedures to minimize releases to the atmosphere. Appendix G provides information on the atmospheric, meteorological, and topographic characteristics of the unit.

### **Prevention of Accidental Ignition or Reaction of Wastes (Parts VI.A. and X.A. [Adopts by reference 40 CFR 264.7 and 40 CFR 270.14] of the GHWMRs)**

*Description of Procedures to Prevent Accidental Ignition or Reaction of Wastes (Part VI.A. [Adopts by reference 40 CFR 264.17] of the GHWMRs)*

Movement in a military vehicle of minimum quantities of explosive items necessary for demolition operations, to include proficiency training is permitted. Blasting caps, demolition explosives and unserviceable (but not dangerously unserviceable) munitions may be transported by the same vehicle provided explosives and initiators are separated as much as possible and are in adequate transportation configuration. Upon delivery to the range the waste munitions are placed in one holding area and the initiating devices are put into a separate holding bunker at least 50 feet apart.

Operations at the EOD Range are suspended if there is a wildfire or lightning hazard within 5 nautical miles.

During the pre-operational safety briefing, the only authorized smoking area is identified. Spark producing items are collected during the safety briefing. No smoking is allowed during handling of explosives.

OB/OD operations, generate heat, pressure (shock waves), fires and explosions, and sometimes violent reactions. Andersen AFB is interpreting this requirement to mean that the intentional initiation of such phenomena must be carried out in a controlled setting, which is the intent of the OB/OD operation.

## APPENDIX E – PREVENTION OF IGNITION OR REACTION

*Documentation of Adequacy of Procedures (Part VI.A. [Adopts by reference 40 CFR 264.17] of the GHWMRs)*

EOD Range operators are very familiar with the procedures to prevent accidental ignition or reaction of the waste munitions. In addition to the precautions found in the SOPs utilized on the range, EOD personnel spend much of their time in training exercises (Appendix D, Personnel Training). DOD-wide historical experience has shown that accidental detonation or combustion have been extremely rare when SOPs are strictly followed.

**APPENDIX F**

**Contingency Plan**

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## APPENDIX F – CONTINGENCY PLAN

### HAZARDOUS WASTE CONTINGENCY PLAN FOR EXPLOSIVE ORDNANCE DISPOSAL FACILITY ANDERSEN AIR FORCE BASE, GUAM

## 1.0 INTRODUCTION

The purpose of the Explosive Ordnance Disposal (EOD) Facility Contingency Plan is to describe the actions that EOD personnel will take to minimize hazards to human health or the environment in response to any unplanned fires, explosions, or any sudden or non-sudden releases of hazardous waste (HW) or constituents. This EOD Contingency Plan is specifically for use during the treatment of ammunition/munitions items at the EOD Range. It applies to all assigned EOD personnel and others assisting in treatment operations. This EOD Contingency Plan does not cover the storage or transportation of the ammunition/munitions and is specific to operations at the EOD Range. *36<sup>th</sup> Wing Comprehensive Emergency Management Plan (CEMP) 10-2* provides a Basewide Contingency Plan for operations conducted at Andersen AFB.

HW treatment operations conducted at the EOD Range are not typical of normal RCRA treatment, storage, and disposal (TSD) operations. The wastes which are treated at an EOD Range are designated hazardous due to their reactive (explosive) characteristic. Treatment methods address the elimination of the explosive hazard of the waste. As such, the overriding operational concern is safety. Three types of emergencies are possible: 1) explosive, 2) fire, and 3) environmental. Environmental releases are unlikely for either explosive or fire emergencies. In either of these cases, human health and safety is the overriding concern. An environmental emergency would most likely consist of a virgin diesel fuel spill, which would be handled under procedures outlined in the Base Spill Prevention, Control and Countermeasure (SPCC) plan.

The EOD Contingency Plan is designed to minimize hazards to human health and the environment resulting from unplanned releases of hazardous materials associated with EOD operations.

*Actions to Take in Case of Emergency (Part VI.A. [Adopts by reference 40 CFR 264.53 and 40 CFR 264.56] of the GHWMRs)*

Figure 1 in the EOD Range Contingency Plan provides a flow chart of Emergency Response Actions for Andersen.

## 2.0 DEFINITIONS

- 2.1 EOD Range – The EOD Range, the unit to be permitted, is located at the extreme eastern reach of Tarague Beach, ending just before Tagua Point. The grid coordinates for the range are 13 Degrees, 35.58 minutes North, 144 Degrees, 56.48 minutes East. See Appendix G for the location. Its mission is to render unserviceable ordnance and other pyrotechnic devices

## APPENDIX F – CONTINGENCY PLAN

harmless by either open detonation or open burning, as well as to allow EOD personnel to maintain a proficiency in the operation of explosive actuated EOD tool sets.

- 2.2 Open Burning (OB) – Waste military energetic materials are burned in containment devices. Typically dunnage is placed into the bottom of the containment device and the OB materials are placed on top. Virgin diesel fuel is carefully added, and the initiating charges are placed on top. The device is secured with an ejection reduction device (e.g., chain link fence, steel perforated planking, etc.). Following final safety checks, the charge is initiated remotely.
- 2.3 Open-Detonation (OD) – Ammunition or explosives to be treated by detonation are placed on the ground at the base of the flight line cliff. An adequate number of initiating devices are placed on top of the items to be detonated. Following a final safety check, the items are detonated remotely. Maximum net explosive weight for all explosives will not exceed 600 pounds.

### 3.0 EMERGENCY RESPONDERS

*3.1 Arrangements with Local Authorities (Part VI.A. [Adopts by reference 40 CFR 264.52] of the GHWMRs)*

In the event of an emergency at the EOD Range, on-base police, fire department, and medical support personnel will provide the necessary coverage. 36 Wing CEMP 10-2 dictates the coordination and responsibilities of the response teams. These agencies are tasked to conduct personnel training to ensure that their response capabilities for an emergency at EOD Range are effective.

*3.2 Names, Addresses, and Phone Numbers of Emergency Coordinators (Part VI.A. [Adopts by reference 40 CFR 264.52 and 40 CFR 264.55] of the GHWMRs)*

The emergency coordinator will be known as the Incident Commander (IC). The initial IC will be the Range Safety Officer (RSO). If any emergencies are beyond the capabilities of the EOD personnel on site, IC will transfer to the Senior Fire Officer (SFO), once they are on-scene. The RSO will remain to advise the IC once command has transferred.

The IC will be thoroughly familiar with all aspects of the EOD Range Contingency Plan, all operations and activities at the range, the location and characteristics of wastes handled, the location of applicable records, and the facility layout. He/she is responsible for coordination of emergency containment, control, and cleanup activities during and after an uncontrolled release at the EOD Range. In case of an emergency he/she is the primary point of contact and is responsible for activation of a response team, as needed.

## APPENDIX F – CONTINGENCY PLAN

The following personnel are qualified to act as Emergency Coordinators/Incident Commanders for the EOD Range:

### PRIMARY:

#### **Fire Chief**

36 CES/CEF, Unit 14007 APO AP 96543-4007

Duty Phone: 366-6201      Non-duty Phone: 366-5284

### ALTERNATES:

#### **Deputy Fire Chief**

36 CES/CEF, Unit 14007 APO AP 96543-4007

Duty Phone: 366-6201      Non-duty Phone: 366-5284

#### **Asst. Chief of Operations**

36 CES/CEF, Unit 14007 APO AP 96543-4007

Duty Phone: 366-5284      Non-duty Phone: 653-5284

#### **Chief, EOD Flight**

36 CES/CED, APO AP 96543-4009

Duty Phone: 366-5198      Non-duty Phone: 366-2981

#### **NCOIC, EOD Flight**

36 CES/CED, APO AP 96543-4009

Duty Phone: 366-5198      Non-duty Phone: 366-2981

## **4.0 EMERGENCY EQUIPMENT**

Location and Description of Emergency Equipment at the Facility (Part VI.A. [Adopts by reference 40 CFR 264.52] of the GHWMRs)

- 4.1 EOD Equipment – During EOD Range operation the following equipment is on-site:

- First Aid Kit
- Potable Water
- At a minimum, explosive laden vehicles will have two 2A:10BC ABC fire extinguishers
- 1 communication radio per vehicle
- Two, 2 way portable hand held radios
- 2 shovels

Emergency equipment is inspected before and after all OB/OD operations. During the safety briefing, prior to EOD Range operations, the location of



## APPENDIX F – CONTINGENCY PLAN

all emergency equipment is reviewed with the EOD team. The portable radios are continually monitored during an EOD operation. The location and number of vehicles present during the operation is also noted. Each explosive laden vehicle at the EOD Range contains 2 easily accessible, 2A:10BC ABC fire extinguishers as well as a vehicle radio.

- 4.2 Fire Equipment – In the event of a fire emergency on the EOD Range beyond the capacity of EOD equipment, Andersen Fire Department would be alerted. The Fire Department would respond to the EOD Range area with the equipment required to mitigate the situation, as determined by the SFO.

This equipment is located at Fire Protection Flight, Building 17002, on Andersen AFB, and available for emergency response to the EOD Range. Estimated time of response to the EOD Range is approximately 8 – 10 minutes.

- 4.3 Environmental Equipment – During the open burning treatment of HW, approximately ten to twenty gallons of virgin diesel fuel is used per burn. The possibility exists that a small amount of fuel could spill. EOD personnel would remove any contaminated sand and treat it in the burn containment device. If an environmental response is required that is beyond the capabilities of the EOD personnel, the Base environmental spill team can be activated by the Fire Department.

The spill response vehicle is located on Base at the Civil Engineering Squadron, Building 18001 parking lot. It is equipped with personal protection devices and spill containment. Heavy equipment for soil removal are located at the Heavy Equipment Shop, Building 20021.

## 5.0 EVACUATION PLAN

*Evacuation Plan for Facility Personnel (Part VI.A. [Adopts by reference 40 CFR 264.52] of the GHWMRs)*

- 5.1 EOD Range – There is only a limited number of personnel on the range during operations. In most emergency situations, the safest position for people is the personnel bunker. This is the position from where the detonations are initiated for both OB and OD operations. This bunker provides cover from explosives ejecta for detonations and open burns up to the range safety limit.

The only possible situation, in which personnel would commence evacuation of the range, would be where a fire has engulfed unexploded ordnances in the immediate vicinity of the personnel bunker. In this case, the personnel on the range would evacuate by foot or by vehicle to the

## APPENDIX F – CONTINGENCY PLAN

small arms range and regroup at the emergency phone. If the Fire Department was required, and had not been contacted by radio, they would be contacted by the small arms range emergency phone.

- 5.2 Base – A Base wide evacuation plan is not applicable to this operation. Unlike a typical RCRA Treatment, Storage, and Disposal (TSD) operation, the EOD Range has an established safety zone surrounding the treatment area. This safety zone encompasses the maximum distance that detonation/burn fragments will travel in accordance with a maximum net explosive weight for all explosives that will not exceed 600 pounds.

### 6.0 CONTINGENCY PLAN COPY LOCATION

*Location and Distribution of Contingency Plan (Parts X.A. and VI.A. [Adopts by reference 40 CFR 270.14 and 40 CFR 264.53] of the GHWMRs)*

Copies of the Contingency Plan as well as any updates or revisions to the plan will be located at the following places:

EOD Flight Office  
EOD Range Binder  
CEV Environmental Flight  
Fire Protection Flight  
Medical Clinic  
Security Police  
Emergency Response Spill Team  
Emergency Operations Center  
Bioenvironmental Office  
Safety Flight

### 7.0 EMERGENCY RESPONSE PROCEDURES

*Immediate Procedures for Emergency Coordinator to Alert All Facility Personnel in Case of Emergency and Notify State and Local Agencies If Help Is Needed (Part VI.A. [Adopts by reference 40 CFR 264.56(a)] of the GHWMRs)*

Any person who detects an imminent or actual fire, explosion, or any other unplanned sudden or non-sudden release of HW or constituents will immediately sound a vocal and/or radio warning to endangered personnel.

Upon detection of an emergency incident the situation will be immediately reported to the EOD Range Safety Officer (RSO). Once the RSO declares an emergency, they are known as the Incident Commander (IC). The IC will evaluate the incident to determine the potential for endangerment to human health and/or the environment. The EOD Contingency Plan will be implemented immediately by the IC in the event that there is an

## APPENDIX F – CONTINGENCY PLAN

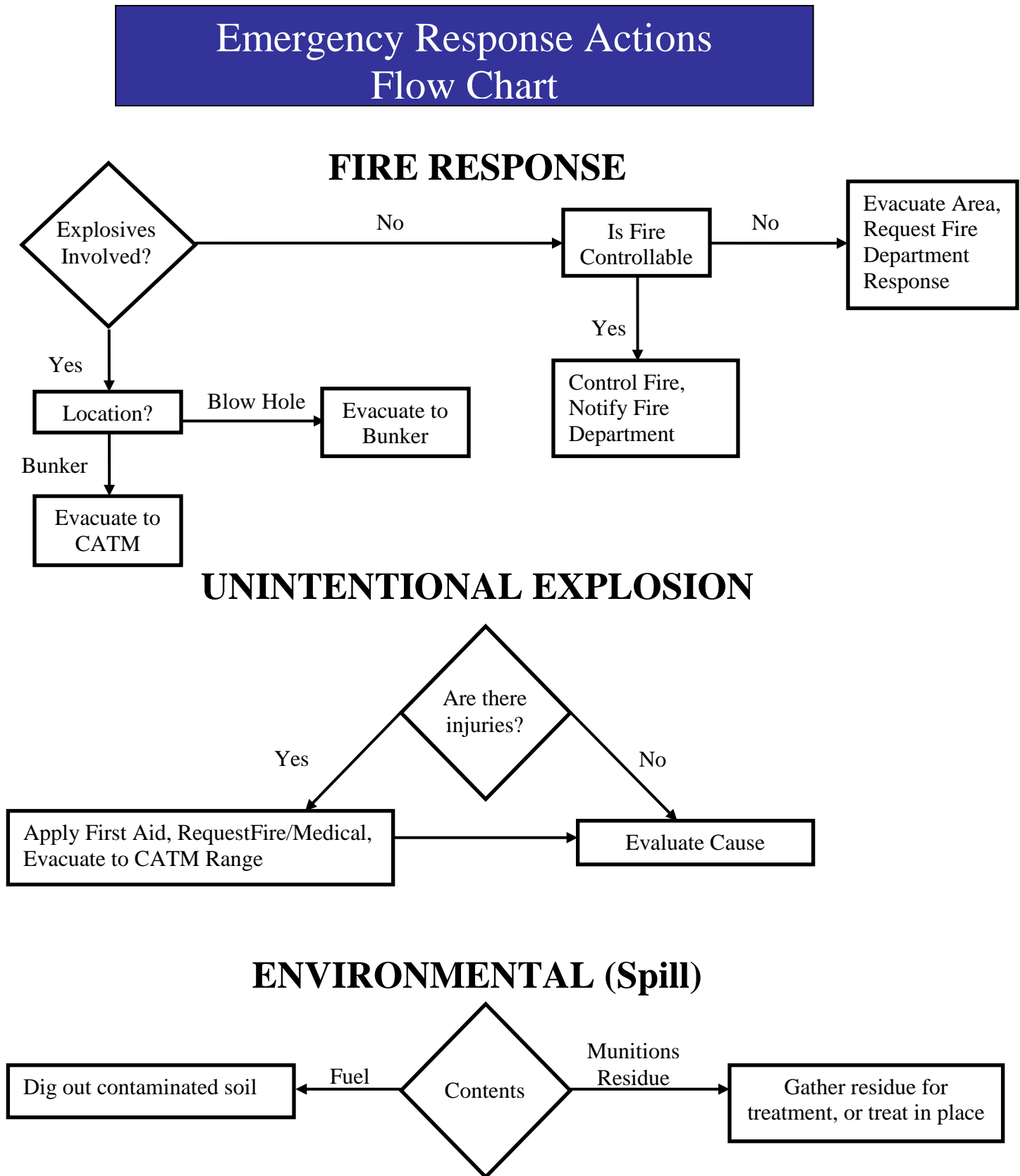
accident at the EOD Range which could result in the release of HW or constituents that could threaten human health or the environment.

The IC will be thoroughly familiar with all aspects of the EOD Range Contingency Plan, all operations and activities at the Range, the location and characteristics of wastes handled, the location of applicable records, and the facility layout. The IC is responsible for coordination of cleanup activities in the event of an uncontrolled release of HW at the EOD Range. The emergency procedures outlined in 36 WGI 32-3001, Attachment 3 will be followed to dispose of any uncontrolled HW releases.

EOD Range personnel will be used to initially respond to spills and other cleanup operations in terms of initial defensive actions. The Andersen Air Force Base Spill Prevention and Response Plan will be implemented immediately upon a spill incident. In the event of an emergency at the EOD Range that is beyond the response capabilities of EOD personnel, Andersen Fire Department will be notified by the IC. Once Fire Department gets on-scene, IC will transfer to the Senior Fire Officer. The RSO will remain with the IC to advise him/her. The IC will direct operations as needed to ensure that the situation is brought under control.

Dependent on the nature of the emergency, the IC will provide appropriate notification to on-base offices or teams, who will aid in the emergency response (e.g., medical personnel, spill team, etc). All emergency response teams that may be called upon to provide emergency service are located on base. The emergency response actions for implementing the EOD Range Contingency Plan are illustrated in Figure 1.

Figure 1



## **8.0 IDENTIFICATION OF HAZARDOUS MATERIALS RELEASED**

*Plans for the Emergency Coordinator to Identify the Character, Source, Amount, and Areal Extent of Any Explosion, Fire, or Release (Part VI.A. [Adopts by reference 40CFR 264.56] of the GHWMRs)*

The IC will identify the characteristics and hazards of the fire, explosion, or release by knowledge of process or container contents, observation, or documented analytical information.

## **9.0 ASSESSMENT OF POSSIBLE HAZARDS TO HUMAN HEALTH OR THE ENVIRONMENT**

*Means for Assessment of Possible Hazards to Human Health or the Environment from an Explosion, Fire, or Release (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)*

Upon determining that the facility has had an explosion, fire, or release that could threaten human health or the environment, the OSC is responsible for assessing the nature of the threat. Both direct and indirect effects of the explosion, fire, or release must be considered during the assessment. The criteria to be used to assess a possible hazard to human health or the environment and the need for evacuation or other measures will be largely qualitative. The following criteria should be considered:

- a) The nature and magnitude of the explosion, fire, or release;
- b) Weather (e.g., wind direction and speed) and other conditions at the time of the explosion, fire, or release;
- c) The possibility that the explosion, fire, or release may result in the spreading of additional explosions, fires, or releases, and,
- d) The possible threat to human health and/or the environment from an explosion, fire, or release.

*Procedures to be Followed by Emergency Coordinator in Case of a Threat to Human Health or the Environment Outside the Facility (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)*

The EOD Range is located in an isolated area on a secure base. Therefore, the possible threat to human health or the environment outside the facility is limited. If the assessment indicates the need for evacuation, the IC will coordinate with the appropriate military authorities.

## **10.0 PROCEDURES TO PREVENT EXPLOSIONS, FIRES, RELEASES**

## APPENDIX F – CONTINGENCY PLAN

*Procedures to be Followed by Emergency Coordinator to Prevent Fires, Explosion, or Release from Occurring, Recurring, or Spreading to Other Hazardous Wastes at the Facility (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)*

During an emergency, the OSC will take all reasonable measures necessary to ensure that explosions, fires, and releases do not occur, recur, or spread to other hazardous waste at the facility. The guidance established in the 36 WGI 32-3001, provides EOD Range personnel with procedures to follow to prevent explosions, fires, or releases from occurring, recurring, or spreading to other hazardous waste at the facility. Historically, procedures developed for the treatment of hazardous waste munitions at DOD facilities have ensured the safety of EOD personnel.

- 10.1 Fire Hazards - In the event of an uncontrolled fire at the EOD Range, the IC will attempt to maintain control of the situation through the implementation of the EOD Range Contingency Plan, if necessary. Due to the inherent danger associated with EOD operations, fire prevention is an important safety concern. Fires involving explosives are extremely dangerous and can react in an unpredictable manner. Some explosives exposed to fire will burn, detonate, or a combination of both. The following factors should be considered when fighting fires involving explosives:

- Personnel risk
- Safety of others in the immediate area
- Loss of valuable equipment
- Loss of other explosives

For fire emergencies that do not involve explosives, the initial fire-fighting response is from EOD Range personnel. Fires beyond the capabilities of EOD Range fire-fighting equipment will require notification and response by Andersen Fire Department.

- 10.2 Spills - The hazardous waste is a containerized solid (bomb cases, shells) until its actual burn/detonation, limiting the potential for spills. The only potential for a liquid spill would be the virgin diesel fuel used to ignite the OB. The procedures outlined in the Andersen AFB Spill Prevention and Response Plan (also known as SPCC) provides information on the actions that would be required to protect human health and the environment in case of a spill involving diesel fuel. Small volumes (10-20 gallons) of virgin diesel fuel are utilized for the OB; any contaminated sand would be immediately shoveled up for proper disposal as petroleum-contaminated soil.

## 11.0 STORAGE AND TREATMENT OF RELEASE MATERIAL

*Storage, Treatment, and Disposal of Released Material (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)*

## APPENDIX F – CONTINGENCY PLAN

Immediately following an incident, the IC will make arrangements for the treatment and disposal of recovered waste, waste residues, and any contaminated materials. It is often considered unsafe to transfer or containerize spilled explosives. If conditions permit, the material will be detonated in place. If the IC determines that it is safe to move any spilled material, it will be collected and re-detonated at the OD pit in accordance with 36 WGI 36-3001.

### **12.0 MONITORING**

Monitoring for Leaks, Pressure Buildup, Gas Generation or Ruptures of Released Material (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)

The EOD Range does not incorporate equipment that would require monitoring for leaks, pressure buildup, or gas generation. All equipment that is on on-site is inspected before and after any OB/OD operations.

### **13.0 INCOMPATIBLE WASTE**

Procedures for Preventing Handling of Incompatible Wastes Until Cleanup is Complete (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)

The IC will ensure that no waste that might be incompatible with the released materials is treated until cleanup procedures are complete. This decision is made based on the chemical and physical characteristics of the waste.

**14.0 DECONTAMINATION PROCEDURES** (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)

Following an emergency response, the IC will ensure that all equipment is decontaminated, as necessary. Equipment decontamination will be accomplished in accordance with CES/CEV (Environmental Flight) direction. Prior to EOD operations resuming, any emergency equipment used during an emergency response will be clean and ready for its intended use.

### **15.0 NOTIFICATION AND REPORTING PROCEDURES**

*Procedures for Record Keeping and Reporting to EPA (Part VI.A. [Adopts by reference 40 CFR 264.56] of the GHWMRs)*

- 15.1 Base Authorities – *Air Force Instruction 91-204*, Investigating and Reporting US Air Force Mishaps provides SOPs for reporting explosives and chemical agent mishaps. In the event of a mishap on the EOD Range a USAF Hazard Report, AF Form 457, is completed and submitted to the Safety Flight Office.

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The fire protection flight retains a computer log of all emergency response. The reports must be prepared and submitted according to directions provided in DOD 6055.7-M, Fire Incident Reporting Manual.

CEV Environmental Flight is contacted by the Fire Department to identify any possible environmental damage, and, if applicable, receives a spill report.

- 15.2 Regional and Federal Notifications – Dependent upon the nature of the Incident, other agencies may require notification. If the incident is a threat to human health or the environment, the National Spill Response Center (800) 424-8802 must be notified. An emergency release into the ocean requires notification of the U.S. Coast Guard, Guam EPA, and the Division of Aquatic and Wildlife. U.S. Fish and Wildlife requires notification of a HW emergency release if the possibility exists for potential impact to endangered species.

A written report of the emergency incident which required implementation of the EOD Contingency Plan must be submitted to Guam EPA within 15-days of the incident. The report must include, at a minimum, the following information:

- Name, address, and telephone number of the owner or operator;
- Name, address, and telephone number of the facility;
- Date, time, and type of incident (e.g., fire, explosion);
- Name and quantity of material(s) involved;
- Extent of injuries, if any;
- Where applicable, an assessment of actual or potential hazards to human health or the environment; and
- Estimated quantity and disposition of recovered material that resulted from the incident.

This report must be submitted to:

Administrator  
Guam Environmental Protection Agency  
P.O. Box 22439 GMF  
Barrigada, Guam 96921  
Attn: Air and Land Division

## **16.0 AMENDMENTS AND REVISIONS TO THE EOD RANGE CONTINGENCY PLAN**

The EOD Range Contingency Plan will be reviewed annually and amended as required. Amendments may be required whenever the following occurs:



## APPENDIX F – CONTINGENCY PLAN

- The EOD Range Permit is revised;
- The plan fails in an emergency;
- A change occurs in EOD Range operations, design, or other circumstances that would increase the potential for an emergency or changes the response necessary in an emergency;
- A change in the list of emergency coordinators; or
- The list of emergency equipment changes.

Review of this Plan will involve input/sign-off from the following people:

CEV Environmental Flight

Fire Protection Flight

EOD Flight

Commander, 36 Civil Engineer Squadron

### **17.0 REFERENCES**

36<sup>th</sup> Wing Instruction 32-3001, Attachment 3

36<sup>th</sup> Wing *Comprehensive Emergency Management Plan 10-2* Andersen AFB SPCC Plan

## **Appendix G**

### **Closure and Post-Closure Plan**

## APPENDIX G – CLOSURE AND POST – CLOSURE PLAN

### **Closure and Post-Closure Plan**

Closure Plan Documentation (Part X.A. [Adopts by reference 40 CFR 270.14(b)(13)] of the GHWMRs)

#### **Introduction**

The purpose of this closure plan is to describe the procedures and methods by which the open burning/open detonation (OB/OD) units and surrounding area of the Andersen AFB Explosive Ordnance Disposal (EOD) Range will be closed in accordance with the Resource Conservation and Recovery Act (RCRA).

This plan describes the OB/OD units, decontamination and sampling procedures, health and safety requirements during closure, and the approximate closure schedule. This plan includes a Sampling and Analysis Plan (SAP) and a Quality Assurance Project Plan (QAPP) to be implemented at time of closure. (Attachment 1)

This closure plan is based on the achievement of clean closure of the facility. If clean closure cannot be achieved, this closure plan will be revised to include post-closure care requirements and restrictions. It will then be submitted to the appropriate regulatory agencies for review and approval.

#### **Location and Description of OB/OD Operations Facility**

The EOD Range has been operated exclusively for EOD purposes since the time (> 20 years) of its designation by Andersen Air Force Base. No operations other than OB/OD are conducted at the EOD Range. The mission of the range has been to render unserviceable ordnance and other pyrotechnic devices harmless by either suppressed detonation or open burning, as well as to allow EOD personnel to maintain a proficiency in the operation of explosive-actuated EOD tool sets. In addition, the range has been used for emergency purposes.

The EOD Range is located at the extreme eastern reach of Tarague Beach, just west of Tagua Point. The grid coordinates for the OD units are 13 degrees, 35.58 minutes north, 144 degrees, 56.48 minutes east. The active treatment units are provided with a 2,400-foot-radius safety zone, above and below the cliff line. The location of the treatment unit and the 2,400-foot-radius safety zone are delineated in Figure 2-12.

The active open detonation units are located at the extreme eastern edge of Tarague Beach. They consist of two pits, each located directly along the face of an approximately 30-foot tall cliff. Due to previous detonations, the cliff has been hollowed out slightly. Rocks which have been removed during previous detonations are piled on either side of the active OD units. Detonation of the munitions at the cliff face provides for additional safety with respect to directing the destructive force of the detonation away from occupied areas. Open detonations consist of placing the waste munitions in the OD pit, placing detonating charges (to initiate the detonation of the waste munition) and ignitors (to initiate the detonating charges). Detonation is remotely initiated from the personnel bunker.

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The inactive open burning pit was located directly on the beach in the sand in an area free of vegetation. It is approximately 80 feet north of the jungle (with a sharp rise), 150 to 190 feet south of the Pacific Ocean, and approximately centered east-west within the open range area.

The open burning units are operated in a different manner than the open detonation units. The open burning operations are characterized by: flammable dunnage (wood) is placed in the burn kettle for fuel and to provide air to the fire. Next, the waste munitions are placed in the burn kettle. These materials are then soaked with 10 - 15 gallons of fresh diesel fuel. An ignition device is placed in the burn kettle. The munitions are then remotely activated from the personnel bunker.

Open burning in the active OB unit was conducted in a burn kettle. This kettle was approximately 4 feet in diameter and 5 feet tall. The OB pit in which the burn kettle was placed was roughly 45 feet long by 14 feet wide by 6 feet deep.

Previous to 1992, the open burning operations at Andersen AFB EOD Range were not contained in a burn kettle, but were burned on the ground within the pit.

### **Applicability of Closure and Post-Closure Care Regulations**

1. All owners or operators of hazardous waste management facilities must prepare closure plans describing how each open burning and open detonation at the facility will be closed.
2. The hazardous waste management unit operated after November 18, 1980 (OB/OD units) at Andersen Air Force Base EOD Range is considered hazardous waste management units, since they treat reactive waste.
3. Therefore, the closure requirements under Part VII.A. [Adopts by reference 40CFR 264.110 – 264.120 (Subpart G)] of the GHWMRs are applicable to this facility.

Post-closure care regulations are applicable to Hazardous Waste Management Units that cannot be "clean closed" and must be closed in place. The post-closure care period for each unit that is closed in place must begin as soon as the unit is closed and must continue for 30 years (or other as specified in the permit).

It is the intention of this closure plan to achieve clean closure, thereby eliminating the requirement for post-closure care requirements.

### **Closure Requirements**

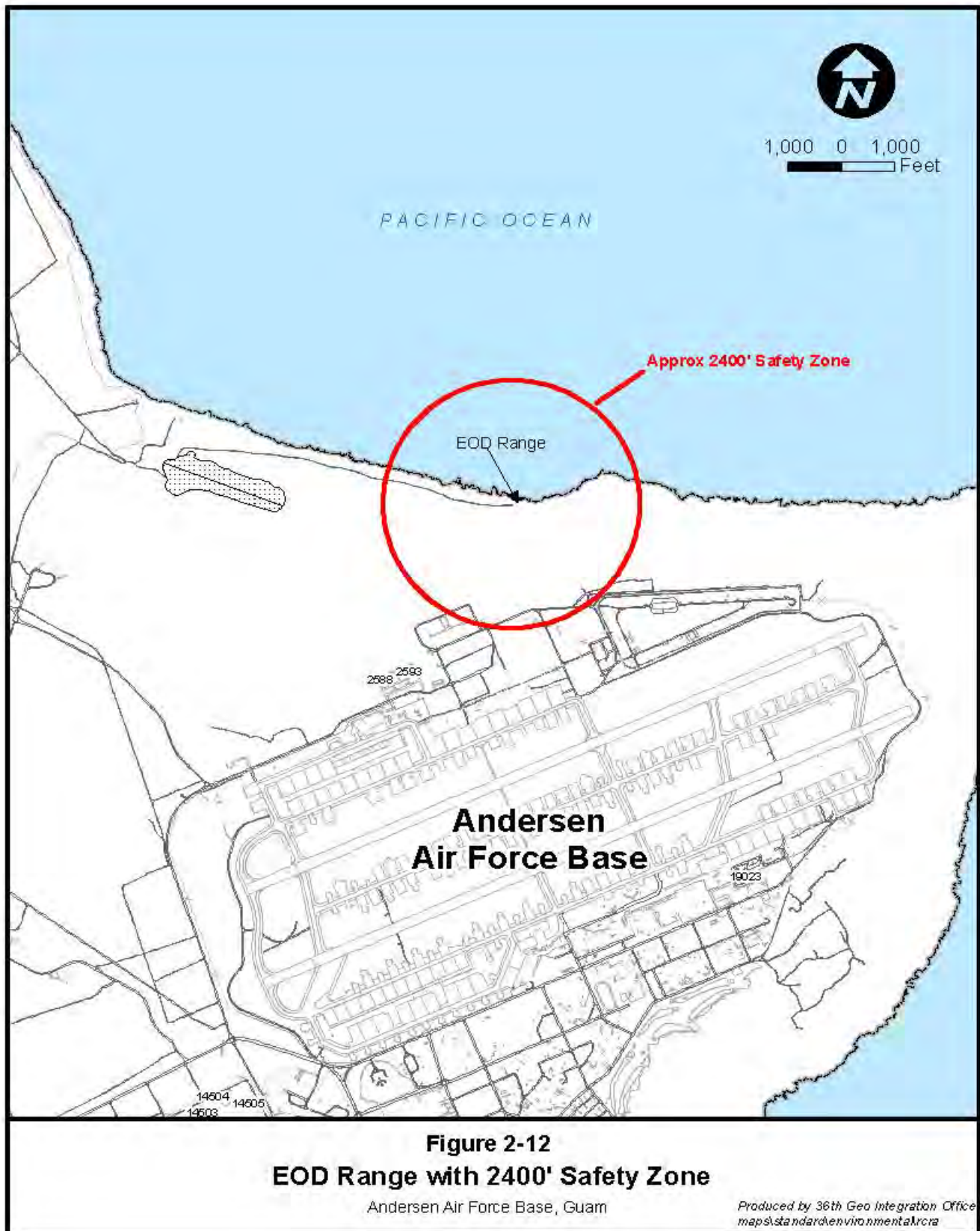
This plan describes the steps and techniques to completely close the Explosive Ordnance Disposal (EOD) Open Burning/Open Detonation (OB/OD) Range. This document has been prepared in accordance with Parts VI.A. and X.A. [Adopts by reference 40 CFR 264 Subpart X, Miscellaneous Units, 40 CFR 270.14(b)(13), and 40 CFR 264 Subpart G] of the GHWMRs requirements.

Andersen AFB Environmental Flight Office will maintain a copy of this closure plan, including all revisions, at least until certification of closure.

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### *Amendments to Closure Plan*

Any revisions to this closure plan will be submitted to the Guam Environmental Protection Agency (Guam EPA) for approval. The plan will be revised whenever any of the following would affect closure:



## APPENDIX G – CLOSURE AND POST – CLOSURE PLAN

- modifications are made to existing OB or OD structures;
- the quantity or composition of the waste material to be treated by OB/OD is increased or altered, operating procedures are revised, or regulatory requirements change;
- the expected year of closure changes;
- during closure activities, unexpected events occur that require a modification to the closure plan; and
- any closure plan procedures (e.g., decontamination or sampling) are revised to accommodate modern techniques.

*Closure Performance Standard (Part VI.A. [Adopts by reference 40 CFR 264.111(a), (b) and (c)] of the GHWMRs)*

The OB/OD units will be closed in such a manner as to meet the Closure Performance Standard. The proposed clean-closure will eliminate the need for further maintenance. The units will be closed to the extent necessary to protect human health and the environment through closure and post-closure. The closure procedures implemented herein will prevent the escape of hazardous waste, hazardous constituents, contaminated run-off, and waste decomposition products to the ground or surface waters or to the atmosphere. Part VI.A. [Adopts by reference 40 CFR 264.601 Subpart X] of the GHWMRs requires that miscellaneous units are closed in a manner that prevents any releases that may have adverse affects on human health and the environment due to migration of waste constituents in the groundwater, subsurface environment, surface water, wetlands, or on soil surface. Clean closure will assure that the closed OB/OD units will not affect human health or the environment.

Previous DOD studies of open burning units on the ground that had been operating a number of years have shown that contaminated soils and residues were present in the immediate vicinity of the OB unit; however, they were generally limited to the top 18 inches of soil (U.S. Army AEHA 1987). In addition, the soils were frequently not hazardous due to EP toxicity. Based on these studies and knowledge of the OB/OD units, it is anticipated that clean closure will be achieved for both the OB and OD units.

Closure will be achieved based on soil removal and decontamination as discussed in the following sections. These procedures will be utilized to achieve cleanup standards which are protective of human health and the environment, which are determined prior to closure. Several regulatory and health-based criteria will be considered, in conjunction with the planned use of the site, to determine cleanup levels. Health-based target concentrations (carcinogenic and non-carcinogenic effects) which have been developed in conjunction with this application will be considered for water and soil. These health based criteria may be revised at time of closure if risk assessment values or methods have been updated. Depending on the proposed groundwater usage, drinking water or other Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act and Alternative Concentration Limits (ACLs) will be evaluated for groundwater concentrations. Background concentration limits for waste constituents in the soil will be evaluated as potential cleanup criteria, depending on plausible future patterns of use. The compounds of concern are those which will be sampled as per the closure sampling plan and baseline sampling plan. These compounds are listed in Table II-4, Standards, Criteria, and Benchmark Values of

## APPENDIX G – CLOSURE AND POST – CLOSURE PLAN

Sampling Parameters. The performance standard to eliminate air contamination is based on the termination of OB/OD activities.

### *Certification of Closure*

Certification that final closure of the units has been completed in accordance with the approved closure plan will be submitted to Guam EPA within 60 days of final closure. The certification will be sent by registered mail. The certification will be signed by the owner or operator (Andersen AFB Base Civil Engineer), the engineer responsible for oversight of the closure, and an independent professional engineer.

### *Description of Partial or Final Closure Procedures (Part VI.A. [Adopts by reference 40 CFR 264.112(b)(1) and (2)] of the GHWMRs)*

Andersen AFB intends to operate both the OB and OD units in tandem, until the units are no longer required. It is estimated that the OB/OD units will be operated until the Air Force Base ceases operation.

Therefore, the OB and OD units will be closed at the same time; no partial closure activities are contemplated.

The management of investigation and potential remediation of inactive SWMUs in the EOD Range are discussed in Section J, RCRA Corrective Action Section.

During final closure, each unit will be closed by treating the final volume of hazardous waste, treating the explosive residues generated during the last treatment, and removing of all metal from the surface of the beach for resale as scrap or disposal in accordance with applicable regulations.

The pit of each unit will then be sampled and analyzed in accordance with the OB/OD Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for Closure, Attachment 1. If any contaminated soil is identified, it will be removed and disposed of offsite. If it cannot be removed and disposed of, closure-in-place will be implemented following approval of a modified closure plan. After sampling and soil removal, the pits will be backfilled and re-graded. In addition to closure of the land pits, the burn kettle(s) will be decontaminated and recycled or disposed of in accordance with applicable regulations.

### *Description of Maximum Unclosed Portion During the Active Life of the Facility (Part VI.A. [Adopts by reference 40 CFR 264.112(b)(2)] of the GHWMRs)*

RCRA requires that the closure plan include a description identifying the maximum extent of the operations which will be unclosed during the active life of the facility.

During the active life of the EOD facility, the active OB/OD units will not be closed. The OD unit consists of two (2) pits, each located directly along the face of the cliff at the extreme eastern end of the beach. The active open burning treatment unit is located approximately 80 feet from the cliff and 150 to 190 feet from the ocean, approximately centered east-west within the range.



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**Table II-4**  
**Standards, Criteria and Benchmark Values for Sampling Parameters**

Chemical Name Listed in Composition and Combustion Lists	Human Health Criteria								
	RCRA Action Level			Health-Based Target Concentration					
				Non-carcinogenic Effects			Carcinogenic Effects		
	Air (mg/m <sup>3</sup> )	Water (µg/L)	Soil (mg/kg)	Air (mg/m <sup>3</sup> )	Water (µg/L)	Soil (mg/kg)	Air (mg/m <sup>3</sup> )	Water (µg/L)	Soil (mg/kg)
Barium	4.0E-01	2.0E+03	4.0E+03	5.90E-05	1.04E+00	5.20E+03			
Lead		1.5E+02		1.5E-03	2.23E-03	1.11E+01			
Silver			3.0E+02	2.9E-03	7.4E-02	3.71E+02			
Aluminum		2.0E+01	3.0E+01						
Copper				2.20E-02	5.48E-01	2.75E+03			
Iron									
Magnesium									
Strontium				3.56E-00	8.9E+00	4.46E+04			
Phosphorus									
Antimony		1.0E+03	3.0E+01	2.38E-04	5.94E-03	2.79E+01			
Calcium		1.0E+03	3.0E+03						
Potassium		2.0E+03	4.0E+03						
Tin				3.56E-01	8.91E+00	4.46E+04			
Sulfur									
Sulfates				6.77E+00	1.63E+02	7.20E+04			
Nitrates				9.50E-01	2.38E+01	1.19E+05			
Nitrites									
Ammonia				1.72E-02	1.44E+01	7.20E+04			
Cyanide									
1,3-Dinitrobenzene		4.00E+00	8.00E+00	5.94E-05	1.49E-03	7.43E+03			
2,4-Dinitrotoluene		5.0E-02		1.19E-04	2.97E-02	1.49E+02	9.64E-06	1.12E-04	9.01E-01
2,6-Dinitrotoluene		5.0E-02		5.94E-04	1.49E-02	7.43E+01	9.64E-06	1.12E-04	9.01E-01
Octahydro-1,3,5,7-tetranitro- 1,3,5,7-tetra (HMX)				2.97E-02	7.43E-01	3.70E+03			

## APPENDIX G – CLOSURE AND POST – CLOSURE PLAN

<b>Table II-4</b> <b>Standards, Criteria and Benchmark Values for Sampling Parameters</b>									
Chemical Name Listed in Composition and Combustion Lists	Human Health Criteria								
	RCRA Action Level			Health-Based Target Concentration					
				Non-carcinogenic Effects			Carcinogenic Effects		
	Air (mg/m <sup>3</sup> )	Water (µg/L)	Soil (mg/kg)	Air (mg/m <sup>3</sup> )	Water (µg/L)	Soil (mg/kg)	Air (mg/m <sup>3</sup> )	Water (µg/L)	Soil (mg/kg)
Nitroglycerin				2.97E-04	7.43E-03	3.71E+01	3.86E-04	4.50E-03	3.60E+01
Pentaerythritol tetranitrate (PETN)									
Hexahydro-1,3,5-trinitro-1,2,5-triazine (RDX)				1.78E-03	4.46E-02	2.23E+02	5.96E-05	6.95E-04	3.75E+00
2,4,6-Trinitrotoluene (TNT)				2.97E-04	7.42E-03	3.71E+00	2.19E-04	2.55E-03	2.04E+01
Tetryl (Trinitrophenylmethyl nitramine)				5.94E-03	1.49E-01	7.43E+02			
Nitroguanidine				5.94E-02	1.49E+00				
Dibutyl phthalate		4.00E+03	8.00E+03	5.94E-02	1.49E+00				
Diphenylamine		9.00E+02	2.00E+03	1.49E-02	3.71E-01				
Hexachlorobenzene				4.75E-04	1.19E-02	4.10E-06	4.78E-05	3.38E-01	
TPH									
Hydrogen Cyanide				1.19E-02	2.97E-01				
Hydrogen Sulfide				1.54E-04	4.46E-02				
Nitrobenzene				3.56E-04	7.43E-03				
1,3,5-Trinitrobenzene				2.97E-05	7.43E-04				
White Phosphorus				1.19E-05	2.97E-04				

## APPENDIX G – CLOSURE AND POST – CLOSURE PLAN

*Estimate of Maximum Waste Inventory in Storage and Treatment During Facility Life (Part VI.A. [Adopts by reference 40 CFR 264.112(b)(3)] of the GHWMRs)*

The maximum inventory of hazardous wastes at the facility is based on the allowable range limitation on the net explosive weight (NEW) of unserviceable munitions.

The maximum amount of unserviceable munitions accommodated by the OB/OD units at one time is 600 pounds.

*Description of Procedures for Removal or Decontamination of Hazardous Waste Residues, Equipment, Structures, and Soils (Part VI.A [Adopts by reference 40 CFR 264.112(b)(4) and 264.114] of the GHWMRs) and Location of Disposal Facility*

The closure of the OB/OD units will be based on the most effective and practical treatment available at the time of closure. It will consist of removing and/or decontaminating all structures, soil and other materials contaminated with hazardous waste or hazardous constituents. The closure process will be phased to provide for most effective use of labor and equipment to accomplish the task. Critical decisions will be made throughout the process regarding subsequent steps, based on analysis conducted during closure to determine the extent of contamination and effectiveness of closure procedures.

### Closure Phase I -Materials Removal

The first phase of the closure activities will consist of identification and removal of metallic debris and unexploded ordnance materials. This closure phase will consist of several individual tasks:

1. Visual identification of the beach area surrounding the OB/OD units for metallic debris and unexploded ordnance (UXO) materials. This will consist of a complete "sweep" of the range for materials visible on the surface. Metallic materials will be collected and forwarded to the DRMO (Defense Reutilization and Marketing Office) for proper handling, storage, and recycling. UXO observed will be collected for final treatment by burning or detonation.
2. The beach sand in the range will then be mechanically raked to a depth of approximately 18 inches. Metallic debris and UXO materials observed during this raking will be similarly removed for disposal or treatment.
3. A sweep of the ocean floor between the shoreline and reef-line will be conducted of the area in front of (north) the EOD Range in a similar manner as the beach sweep.
4. A sweep of the jungle within a 300-foot-radius of the open detonation units will be conducted in a similar manner as the beach sweep.
5. In addition to the above noted sweeps, several lines will be traversed through the jungle beyond the 300-foot-radius to ensure there are no materials from the EOD operations. These traversed lines will continue out to the extent of the declared safety zone, 2,400 feet from the open detonation pits.

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### Closure Phase II - Equipment Decontamination

The second phase of the closure process includes removal of residues on the OB burn kettle, sampling, and decontamination phase, if required.

The material from the last treatment conducted in the burn kettle will be handled as per the accepted 36<sup>th</sup> Wing Instruction 32-3001 (36<sup>th</sup> WGI 32-3001). In summary, it will then be sampled to determine if it is hazardous waste or contains hazardous waste constituents. If the material is determined to be a hazardous waste, it will be disposed of at a permitted hazardous waste facility in accordance with regulatory requirements; otherwise, it will be disposed of in a permitted solid waste landfill to be determined.

Once the residues are removed, the burn kettle will be decontaminated. Two possible methods of decontamination of the burn kettle are described below. It is likely the final determination will be made at the time of closure.

1. Flashing. This method is accomplished by using the appropriate fuel and oxidizer to cause the temperature of the containment device to exceed the auto ignition or decomposition temperature of the PEP wastes that have been burned in the unit. The process is utilized by explosives handlers to decontaminate equipment used to haul or store explosive materials (U.S. Army AEHA 1987).
2. Washing. This method consists of decontaminating the burn kettle by first washing with a detergent followed by steam cleaning. After decontamination, any waste waters generated will be placed in appropriate sized drums and sampled for the parameters listed in the OB/OD SAP/QAPP for Closure, Attachment 1. The liquid wastes will then be disposed of in accordance with regulatory requirements.

Once the burn kettle is decontaminated, it will be sampled with surface wipe testing to assure that the decontamination was effective. The wipe sample(s) will be analyzed for the parameters listed in Section 5 and Table 5-1 (Sample ID# OBCD), of the OB/OD SAP/QAPP for Closure, Attachment 1.

*Location of Disposal Facility.* Once confirmatory sampling is completed, the burn kettle will be processed through the DRMO for recycling as scrap steel. Disposal of contaminated soils (if required) will also be processed through the DRMO facility.

### Closure Phase III - Soil/Groundwater Investigation

The third phase of the closure will consist of implementation of the sampling plan to determine the extent of contamination of hazardous wastes or hazardous constituents at the OB/OD range.

Prior to sampling, the range will be evaluated as to whether unexploded ordnance (UXO) remains on site below the depths reached in the beach raking operation. An electromagnetic surveyor ground penetrating radar will be implemented to detect the presence of metal. The ocean will be surveyed by one of these methods for metallic UXO materials from the beach to the reef line, in the vicinity of the OB/OD units. The beach and jungle immediately surrounding the OB/OD units will also be surveyed by one of these methods for metallic UXO materials (300 foot radius).

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If buried UXO is detected in or around the OD unit, the unit will be evaluated by a remote drilling operation. It is unlikely that UXO will be found in the EOD Range. However, if it is located, it will be treated in-place or in the OB/OD unit(s).

*Methods for Sampling and Testing Surrounding Soils.* Sampling activities will commence once the UXO survey is completed. Representative soil samples will be taken from locations throughout the OB/OD range. Sampling and analysis will conform to the procedures summarized in the OB/OD SAP/QAPP for Closure, Attachment 1.

Once samples have been analyzed, a decision will be made regarding the next step of closure. If soil samples have been determined to be contaminated with hazardous wastes or hazardous constituents, secondary sampling may be conducted to determine more precisely the extent of soil that should be removed.

*Criteria for Determining Decontamination Levels.* The criteria for determining the extent of decontamination required to satisfy the closure performance standards will be developed prior to closure. The units will be closed to the extent necessary to protect human health and the environment by implementation of a clean-closure. The cleanup levels will be based on regulatory and health-based criteria in conjunction with the planned use of the site. Potential future uses of the site include archaeological and/or wildlife preservation areas.

Health-based target concentrations (carcinogenic and non-carcinogenic effects) which have been developed in conjunction with this application will be considered for water and soil. These health-based criteria may be revised at time of closure if risk assessment values or methods have been updated. If the groundwater may be used for drinking water in the future, MCLs established under the Safe Drinking Water Act will be applied to groundwater. However, ACLs will be evaluated for groundwater concentrations if there are no future plans for drinking water (see Table II-4, Standards Criteria, and Benchmark Values for Sampling Parameters). Background concentration limits for waste constituents in the soil will be evaluated as potential cleanup criteria, depending on plausible future patterns of use. The compounds of concern are those which will be sampled as per the closure sampling plan and baseline sampling plan. These compounds are listed in Table 5-2.

### Closure Phase IV –Soil/Groundwater Closure

The fourth phase will consist of soil removal and confirmatory sampling, if required to achieve clean closure. If excavation is required, it is probable that a request for extension of closure will be submitted for approval. The final decision as to treatment method(s) will be determined at the time of closure. If any soil is determined to be hazardous, remediation will be implemented. All contaminated soil will be excavated, placed in drums, and disposed of in accordance with applicable regulations at a permitted facility to be determined. Excavation would be completed to the extent possible and/or practical. If it were determined that it was not feasible to excavate soil and a closure-in-place would be required, an amendment to the closure plan would be submitted to Guam EPA for approval. However, it is the intent of this closure plan to achieve clean closure and this requirement for closure in-place is considered highly unlikely.

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If buried UXO cannot be removed or disposed of safely, it will remain in place. In this unlikely event, the facility will be considered closed-in-place, and an amendment to the closure plan will be submitted for review and approval to the appropriate regulatory agencies. If buried UXO is not removed, a deed restriction will be placed on the property (refer to the Documentation of Notice of Deed of this section). Clean sand or soil will be brought to the treatment units for clean fill. The beach area will then be re-graded.

### *Personnel and Human Health Protection During Closure Activities*

The closure of the OB/OD units will be implemented in a manner that is safe to all involved personnel and to human health and the environment. The Contingency Plan and the Preparedness and Prevention Plan as included in the RCRA Part B Subpart X Permit for the EOD Range will be implemented as appropriate to closure operations. All contractors involved with closure activities will be required to be familiar with these plans.

In addition, a Health and Safety Plan (HASP) will be developed and implemented to address the potential hazards associated with this closure. It is probable that the most likely potential hazard(s) is unexploded energetic material and other physical/equipment hazards. The potential for chemical hazards is low.

Andersen AFB EOD personnel or other trained EOD specialists will conduct or will oversee all closure activities that involve reactive materials or UXO. All personnel involved with closure will have the appropriate training in hazardous waste operations.

EOD security and inspection procedures will continue throughout the closure period through closure certification. In addition, EOD personnel or contractors performing closure tasks will inspect temporary storage areas.

### *Hazardous Waste and Materials*

A temporary storage area will be set up on the EOD Range to store closure equipment and wastes generated during closure prior to disposal. Any material determined to be reactive or UXO will be treated onsite in the OB/OD units in accordance with the standard FOI (SOP) and will not be stored in the temporary storage area.

All wastes will be properly labeled. If any wastes are determined to be hazardous, they will be marked with "Hazardous Waste" labels, the EPA ID number of Andersen AFB, the date of generation, and other items required by RCRA regulations and additional Guam EPA requirements, if any. Wastes which may be stored in the temporary storage area include the following:

- burn kettle waste
- contaminated soils and debris contaminated liquids (generated from decontamination procedures)
- miscellaneous wastes (paper, wood, metal, etc.) collected from the EOD Range or generated (during closure activities)

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*Description of Additional Activities Performed During Closure (Part VI.A. [Adopts by reference 40 CFR 264.112(b)(5)] of the GHWMRs)*

*Groundwater monitoring.* For discussion of groundwater monitoring, refer in this section to Description of Procedures for Removal or Decontamination of Hazardous Waste Residues, Equipment, Structures and Soils, Soil and Groundwater Investigation and Closure Sampling Plan.

*Leachate collection.* Leachate collection will not be applicable since the unit will undergo clean closure.

*Run-on and run-off control.* Run-on and run-off may be utilized during closure activities such as covering of drums of decontamination wastes. Run-on and run-off control will not be required during post-closure, since clean closure will be achieved.

*Description of Closure Schedule (Part VI.A. [Adopts by reference 40 CFR 264.112(b)(6) and 264.113] of the GHWMRs)*

The federal regulations require that the owner or operator must treat, remove from the unit or facility, or dispose of on-site, all hazardous wastes in accordance with the approved closure plan within 90 days after receiving the final volume of hazardous wastes. In the case of the EOD operations, when munitions are determined to be unserviceable, they are declared to be hazardous waste. As long as there are munitions at Andersen AFB, the potential exists for the generation of hazardous waste. Therefore, for purposes of this application, the 90-day clock will not commence until all munitions, which may eventually be declared unserviceable and may be treated by EOD operations, are removed or treated by the EOD units. The exception to this statement is if a new process is designed which may treat the unserviceable munitions at Andersen AFB more effectively or in a more environmentally feasible process.

On the day final volume of hazardous wastes is received, the EOD Range will treat the final volume of hazardous wastes and any hazardous residues which may remain in the burn kettle.

The regulations require that the owner or operator complete final closure activities in accordance with the approved closure plan within 180 days after receiving the final volume of hazardous wastes. It is anticipated that the EOD Range will undergo clean closure within the 180-day period without the need of an extension.

See Table II-5, Timetable of Closure Activities.

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Table II-5  
Timetable of Closure Activities

Task	Days from Initiation of Closure
<b><u>Phase 1</u></b>	
Notify Guam EPA of intent to close facility	0 -30
Receive final volume of hazardous waste	0
Treat final volume of hazardous waste	0
Remove residues from final volume of waste treated	1
Initiate closure	1
Rake EOD Range for UXO's and Metals	2 to 45
Treat any UXO that is recovered from raking	10 to 55
Recover and remove all metal	1 to 45
If more time is required for closure, request extension	60 to 150
<b><u>Phase 2</u></b>	
Decontaminate, sample and dispose of burn kettle	55 to 90
<b><u>Phase 3</u></b>	
Sample and analyze soil surrounding units in accordance with sampling plan and QAPP	90 to 120
<b><u>Phase 4</u></b>	
Remove contaminated soil if required	120 to 160
Confirmatory sampling of units if required	120 to 160
Fill re-grade treatment units	160 to 179
Complete clean closure	180
Submit closure certification to Guam EPA	180 to 240

Note: Minor variances from this timetable may be made as required to accommodate closure requirements. These variances will comply with regulatory requirements.



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The closure of the EOD Range will take place in accordance with the time line provided in Table II-5, Timetable of Closure Activities.

### *Estimate of Year of Closure (Part VI.A. [Adopts by reference 40 CFR 264.112(b)(7)] of the GHWMRs)*

The estimate of the year of closure is not predictable at this time. It is assumed that the EOD Range will be required to operate as long as ordnance are maintained at Andersen AFB. It is expected that ordnance will be maintained until the base is closed. The decision to close Andersen AFB will ultimately be made through governmental process and will not be the responsibility of the EOD Commander or the Andersen AFB Commander.

For purposes of this permit, however, the estimate year of closure is 2043, or 50 years from the date of this application.

### *Extension of Closure Time (Part VI.A. [Adopts by reference 40 CFR 264.113(a) and (b)] of the GHWMRs)*

Final closure will be completed within 180 days after receiving the final volume of hazardous wastes. If it is determined that final closure activities will, of necessity, take longer than 180 days to complete; it is determined that closure of the unit(s) is incompatible with continued operation of Andersen AFB; or if there is reasonable likelihood that another person will recommence operation within 1 year, then a modification to the closure plan permit will be requested. The request for modification will be submitted to Guam EPA at least 30 days prior to the end of the 180-day period (after receiving final volume of hazardous waste).

The request will demonstrate the reason(s) for requesting an extension. In addition, the request will demonstrate that the range will continue to be operated in compliance with all applicable permit requirements and that all steps to prevent threats to human health and the environment will be taken.

### **Copy of Post-Closure Plan (Part VI.A. [Adopts by reference 40 CFR 264.117, 264.118, and 264.603] of the GHWMRs)**

The purpose of the closure plan is to achieve clean closure; therefore, post-closure requirements will not be applicable to the OB/OD units on the EOD Range. The determination that clean closure can be achieved is based on the type of operation utilized and scientific judgment. Clean closure is the preferred option, since it will result in the lowest level risk to human health and the environment. If, in the unlikely event it is determined that the quantity of soil required to be removed to achieve clean closure is not practical then a closure-in-place will be implemented. In this case the closure plan will be amended and submitted to Guam EPA for review and approval.

The following paragraphs discuss the applicability of post-closure requirements based on the achievement of clean closure.

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### *Post-Closure Care Mechanisms (Part VI.A. [Adopts by reference 40 CFR 264.603] of the GHWMRs)*

A miscellaneous unit that is a disposal unit must be maintained in a manner during the post-closure period that prevents any releases that may have adverse affects on human health and the environment due to migration of waste constituents in the groundwater, subsurface environment, surface water, wetlands, or on soil surface. Clean closure will assure that the closed OB/OD units will not affect human health or the environment.

In the event that clean closure is not achieved, the closure plan will be amended to include criteria to assure that any waste constituents remaining at closure will not cause adverse effects to human health or the environment.

### *Description of Maintenance, Monitoring, Inspection, and Frequencies Required to Comply with Applicable Regulatory Requirements (Part VI.A. [Adopts by reference 40 CFR 264.118(b)(1) and (2)] of the GHWMRs)*

Based on clean-closure, the units will not require post-closure monitoring of groundwater, air or soil. Since there will be no structural requirements for clean closure (such as a cap), there will be no post-closure maintenance or inspection requirements.

In the event that clean closure is not achieved, the closure plan will be amended to include post-closure monitoring, maintenance, and inspection plan.

### *Identification and Location of Person Responsible for Storage and for Updating Facility Copy of Post-Closure Plan During Post-Closure Period (Part VI.A. [Adopts by reference 40 CFR 264.118(b)(3)] of the GHWMRs)*

Based on clean-closure, a post-closure plan is not required for this application; therefore, this is not an applicable requirement.

In the event that post-closure is required an employee in CES/CEV or EOD will be designated to store and update copies of the post-closure plan. The post-closure plan will be maintained for at least 30 years after certification of closure.

### *Procedure for Updating All Other Copies of Post-Closure Plan (Part VI.A. [Adopts by reference 40 CFR 264.118(b)(2)] of the GHWMRs)*

Based on clean-closure, a procedure for updating all other copies of the post-closure plan is not required. In the event that post-closure is required a procedure for updating all other copies of the post-closure plan will be implemented in the amendment submitted to Guam EPA. An employee in CES/CEV or EOD will be designated to update all other copies of the post-closure plan.

### *Survey Plat*

Based on clean-closure, a survey plat is not required.

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In the event that post-closure is required, a survey plat will be submitted to the local zoning authority. The plat will be certified by a registered professional engineer and will meet all designated regulatory requirements.

### *Post-Closure Certification*

Based on clean-closure, a post-closure certification is not required.

In the event that post-closure is required, a certification of post-closure will be submitted to Guam EPA, 60 days prior to the end of the post-closure care period (30 years from closure certification).

### *Submittal of Post-Closure Record of Hazardous Waste*

Based on clean-closure, hazardous waste will not remain at the facility after closure. Therefore, a record of hazardous waste will not be required to be submitted to the local zoning authority, or authority with jurisdiction over local land use, and Guam EPA.

If clean-closure is not achieved, a record of the type, location and quantity of hazardous wastes remaining within each unit will be submitted to the above mentioned agency within 60 days after certification of closure.

### **Copy of Most Recent Closure and Post-Closure Cost Estimates (Parts VI.A and X.A. [Adopts by reference 40 CFR 264.142, 264.144, and 270.14(b)(15) and (16)] of the GHWMRs)**

Since U.S. Government installations are exempt from these requirements, they are not addressed in this application.

### **Copy of Documents Used as Financial Assurance Mechanisms (Part VI.A. [Adopts by reference 40 CFR 264.143, 264.145, and 264.146] of the HWMRs)**

Since U.S. Government installations are exempt from these requirements, they are not addressed in this application.

### **Documentation of Notice of Deed (Parts VI.A and X.A. [Adopts by reference 264.11940 and CFR 270.14(b)(14)] of the GHWMRs)**

Since this closure plan is based on clean closure, post-closure notices, including a notice of deed restriction, will not be required.

If clean closure, is not achieved (contaminated soil is not removed or UXO is left in place) or if it is determined at the time of closure that a potential for UXO exists at the EOD Range, then the Air Force will record a notation on the deed to the facility property. Alternatively, a notation may be placed on some other instrument, such as a restrictive covenant or easement, which is normally examined during title search. This notation will state that hazardous wastes have been disposed on the property and that property use is restricted under 40 CFR Subpart G regulations. The deed notice will also indicate that a survey plat and record of waste have been filed.

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If required, the deed notation will be recorded within 60 days of certification of closure of the first and last hazardous waste disposal unit. Following the notation to the deed, the Air Force will sign a certification, stating that the deed notification has been recorded. This certification will be sent to the Administrator of Guam EPA, and it will include a copy of the document in which the notification has been placed.

### **Copy of Insurance Policy (Part VI.A. [Adopts by reference 40 CFR 264.147] of the GHWMRs)**

Since U.S. Government installations are exempt from these requirements, they are not addressed in this application.

### **Closure Sampling Plan**

#### Introduction

The closure sampling plan for clean-closure of the Andersen AFB EOD OB/OD units will be implemented in accordance with 40 CFR 264 Subpart G requirements. The sampling activities that will be performed at the time of closure of the OB/OD units will be reevaluated based on the results of the initial baseline sampling program and continued sampling program for detection monitoring. Closure sampling will be conducted before, during and after site remediation activities.

#### *Pre-Closure Soil Quality Sampling*

Shallow soil sampling will be performed on a sampling grid established during the baseline sampling program. Soil sample site grid concentrations will be greater in the immediate vicinity of the OD pit and the burn pit. A limited number of soil samples will be collected along traverse lines extending from the OD pit and burn pit extending to the ocean and the edge of the safety zone.

A geophysical survey of the OD pit, burn pit, and adjacent areas will be conducted prior to soil sampling to detect buried metallic objects which may be indicative of live ordnance. Reconnaissance surveying will be performed using electromagnetic induction (EM-31 and EM-34). Electrical anomalies defined with the EM techniques will be followed with high-resolution profiling using ground penetrating radar (GPR) (as required). Geophysical anomalies that would indicate the potential presence of live ordnance would be brought to the attention of EOD experts. Soil sample locations will be positioned to void any potential safety hazards identified with these geophysical tools.

Pre-closure shallow soil sampling will be divided into two separate sampling schemes. The first scheme will define the vertical and lateral extent of soil contamination within the areas of greatest potential contamination, the OB and OD pits and their immediate vicinity. The second sampling scheme will be conducted outside the immediate vicinity of the active units to determine if significant contamination has resulted from ordnance and related materials ejected during OD unit operations.

The soil sample collection scheme and methodology are discussed in the OB/OD SAP/QAPP for Closure. (Attachment 1)

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### *Soil Closure Sampling*

After the removal of contaminated soil, a round of clearance samples will be collected to determine the effectiveness of the remediation. The clearance samples will be collected from a depth interval below the contaminated soil excavation. Approximately 15 clearance samples will be collected from randomly selected grid cells from the OB and OD pits and their immediate vicinity. Upon evaluation of the clearance sample analytical results, additional soil excavation and sampling may be warranted.

### *Groundwater Sampling*

Groundwater sampling during closure activities will be based upon the OB/OD SAP/QAPP for Closure. (Attachment 1) During the active operation of the OB/OD units, a groundwater monitoring program will be implemented based on 40 CFR 264 Subpart F, Releases from Solid Waste Management Units. The first phase of proposed monitoring will consist of baseline monitoring event. The parameters for this event are listed in Table 5-2 of the OB/OD Sampling and Analysis Plan/Quality Assurance Project Plan for Closure. Based on the initial sampling, a detection monitoring program may be developed to determine whether hazardous constituents are detected at the active facility. If detection monitoring is continued throughout the active life of the facility, the closure sampling will consist of the final round of detection groundwater monitoring. The quality of the groundwater at the EOD range will be well defined prior to closure, in this case.

If the analytical results of the monitoring program indicate that groundwater remediation is warranted, an appropriate groundwater remedial plan will be developed. Prior to clean closure, a final round of groundwater samples will be collected for laboratory analysis.

### *Monitoring Well Closure*

Following review of the final round of groundwater monitoring analytical results the monitoring wells will be closed in an environmentally appropriate manner. Well closure will include removal of casing and over-drilling and plugging with a non-shrinking grout.

### **Quality Assurance Project Plan**

All samples taken for analysis will be analyzed in accordance with Quality Assurance Project Plan requirements, Section 6, Attachment 1 of Appendix G.